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THE SALEM PHILOSOPHICAL LIBRARY: ITS HISTORY AND IMPORTANCE FOR AMERICAN SCIENCE

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IN THE EARLY SPRING of 1781 the Reverend Joseph Willard was half way through the ninth year of his ministry to the people of the First Church in Beverly, Massachusetts.[1] Times had been difficult almost since his arrival in 1772, and with the Revolution they grew harder each year. Severe inflation had cut the real value of his salary to less than half, Willard told his parishioners in 1780, and the following year they responded by renting a house for him and tying his salary, as we would say, to the cost-of-living index.[2]

But there had been good things, too, to relieve the difficulties of war and inflation. Willard had acquired while a student at Harvard some facility in astronomy and mathematics, and he was able at Beverly to make a number of celestial observations. He was a founder of the American Academy of Arts and Sciences in 1780 and became its first Corresponding Secretary. Soon after his arrival in Beverly he had married, and four of his thirteen children were born there.

Beverly in the American Revolution sent out more privateers

1. This paper was prepared for publication during the tenure of a fellowship from the National Science Foundation.

2. Sidney Willard, *Memories of Youth and Manhood* (Cambridge, 1855), I, 65; Edwin M. Stone, *History of Beverly . . .* (Boston, 1843), 231-233. Willard had told his congregation of his difficulties as early as 1779.

than any other port. Before the Revolution, fishing had been Beverly's most important source of livelihood, but the brothers John and Andrew Cabot had been actively building up a firm which traded to Europe. It was an easy matter for the Cabots to shift their interests to privateering and to use their Spanish connections to aid in the condemnation and sale of prizes after France and Spain joined the colonies in their struggle with Britain. The Cabots were the most successful of all American owners of privateers, and the fortune they built up during the Revolution (when most privateer owners probably lost money) launched what soon became Boston's first family.

The most successful of American—and Cabot—privateers was the ship *Pilgrim*. She was built for the Cabots at Newburyport under the supervision of her first captain, Irish-born Hugh Hill. Hill took her on her first cruise in the fall of 1778 and came back to Beverly more than a year later. For her second cruise, which began in March, 1780, *Pilgrim* was commanded by Capt. Joseph Robinson. She returned from this cruise to the neighboring port of Salem, having "captured nine valuable prizes."[3] Those prizes which arrived in Beverly were sold at auction by John and Joshua Grafton and their associate J. Hiller as fast as they were condemned, and Capt. Robinson refitted for a new cruise which began in April.[4] Meanwhile accounts of *Pilgrim's* captures and of the events of her cruise were no doubt circulating around town. Early in April news reached the Reverend Mr. Willard that a valuable library was among the spoils. Perhaps he also heard that it was likely to be sold for scrap paper. Though it was a time of financial stringency, something had to be done. He began to get in touch with those of his friends in nearby communities who might join with him to purchase the books.

The library of which Willard heard belonged to Richard Kirwan (1733-1812). A second son in a prominent Irish family, he was originally destined for the Roman Catholic Church and accordingly studied at the Jesuit college of Poitiers and in Holland. The death of his eldest brother in a duel brought him back to Ireland to claim the family estate of Castle Cregg, Co. Galway.

3. Salem *Gazette*, 13 February 1781.

4. Samuel Eliot Morison, editor, "Log of the Pilgrim, 1781-2," Colonial Society of Massachusetts, *Publications*, XXV (Dec. 1922), 95.

Kirwan began to study law in London after 1761 and was called to the Irish bar in 1766, but he gave up the law in 1768 to study science. He purchased a scientific library in London in 1769, but he soon left the metropolis. In 1772 he was in Dublin, and the following year he was back at Castle Cregg.

In 1777 Kirwan returned to London and settled down in earnest to research in chemistry. He purchased a house in Newman Street, where he held forth in one of the most fashionable salons of the time. In February, 1780, the Royal Society elected Kirwan a Fellow, and he began to publish a series of papers in the *Philosophical Transactions*. Those on chemical affinity won him the Copley Medal in 1782, and in 1784 he published his *Elements of Mineralogy*, the first systematic treatise on the subject in English.[5]

Having determined to stay in London indefinitely,[6] Kirwan sent for his library. It was dispatched from Galway on 5 September 1780 in *Duke of Gloucester*, Capt. Williams, bound for Bristol. The same day *Duke of Gloucester* became the first prize of *Pilgrim's* second cruise. Since the prize's cargo of kelp was of no value to the privateer, the prize was burnt and her crew presumably put ashore. Kirwan's library was probably transferred to *Pilgrim*, since the books found their way to Beverly.[7] On 3 April 1781 the Graftons and Hiller announced the sale at auction of *Pilgrim's* largest and most valuable prize, the frigate *Mary*, which had been libelled against on 8 March. The auction was to take place on 11 April 1781.[8]

5. *Dictionary of National Biography*, article by Agnes M. Clerke; Rev. P. J. McLaughlin, "Richard Kirwan: 1733-1812," *Studies*, XXVIII (Sept. 1939), 474, 593-605; XXIX (June 1940), 71-83, 281-300; Michael Donovan, "Biographical Account of the late Richard Kirwan, Esq., etc." Royal Irish Academy, *Proceedings*, IV (1850), lxxxi-cxviii.

6. He left in fact in 1787 on account of bad health.

7. This account follows the recent researches of William Bell Clark, communicated to the present author by letter. Previous accounts (Wheatland in Essex Institute *Historical Collections*, IV (August 1862) 175 ff.; Tapley, *Salem Imprints*, 248ff.) are incorrect. See Note 8.

8. Salem *Gazette*, 3 April 1781. The advertisement is for the sale of the frigate *Mars*. Previous accounts have assumed that because the library and ship were sold on the same date, the library must have been aboard *Mars*. According to William Bell Clark, *Pilgrim* captured *Mary* (and not *Mars*) in 1781, so that past accounts have contained a double error. Clark assumes that the printer erred in the advertisement, and that it was in fact *Mary* which was auctioned.

Joseph Willard was successful in his search for associates to join him in purchasing the library. He enlisted the support of the Reverend John Prince of Salem's First Church and the Reverend Manasseh Cutler of Ipswich Hamlet.[9] Prince in turn got Dr. Edward Augustus Holyoke of Salem and the Reverend Thomas Barnard of Salem's North Church; Cutler, Dr. Joshua Fisher of Beverly. Prince was deputized to attend the auction of 12 April, and the books—116 in all—were knocked down to him for the equivalent of $435.45.[10]

With the exception of the *Works* of Robert Boyle (five volumes, in the folio edition of 1744),[11] the library consisted of scientific serials, the record of the past century's progress in natural science, indispensable to anyone who hoped to make a worthwhile contribution to this growing field of human endeavor. The publications of the two most important scientific societies—the Royal Society of London and the Académie Royale des Sciences of Paris—made up the bulk of the collection. The *Philosophical Transactions* of the Royal Society were represented by the first ten volumes of the abridged edition and volumes 47 (1751-2) through 64 (1774) of the complete edition. The French Academy's *Mémoires* (1666-1699) and *Histoire* (1699-1761), and the Berlin Academy's *Miscellanea Berolinensia* (7 volumes in 8) completed the Kirwan library purchased at the auction. [12]

The six purchasers gathered at Barnard's on 25 April "to consider in what manner to dispose of the books."[13] They were joined

9. Later changed to Hamilton.

10. I have recalculated the amount shown in sterling in the Record book. The narrative and other pertinent documents noted below are reprinted with minor changes in punctuation, etc., by Henry Wheatland, "Historical Sketch of the Philosophical Library at Salem, with Notes," Essex Institute *Historical Collections* (hereafter E. I. *H. C.*), IV (August-October 1862), 175-81, 271-82. The rate of conversion from sterling to dollars effective at the time, printed as if no different from the rest of the ms. in Wheatland, 176, is actually a later interpolation, apparently in Holyoke's hand.

11. *The Works of the Honourable Robert Boyle*, 5v. (London, 1744). Vols. II-IV contain Kirwan's signature; I was unable to locate Vol. I.

12. Kirwan's signature is in most volumes of the abridged *Philosophical Transactions* and in many of the French Academy volumes. Joseph Felt (*Annals of Salem*, 2nd ed., I, 31-2) states that the *Phil. Trans.* and the French Academy publications were bought by the apothecary William Stearns for wrapping paper, but that he relinquished them to the Philosophical Library.

13. Record Book. Reprinted in Wheatland, "Historical Sketch," 176.

by Dr. Joseph Orne, Willard's Harvard classmate, who wanted to share in the purchase. The others all agreed to his joining, and the money was paid that evening. The books were moved to Willard's house, and the purchasers met there on 11 May to inspect them. They made the Salem members into a committee to draw up rules and regulations, completed in two meetings at Dr. Holyoke's on 8 and 12 June. At a meeting at Willard's on the eighteenth, continued the twenty-sixth, a set of articles was adopted for The Philosophical Library Company. Prince spent $114 for boxes in which to keep the books. Willard was chosen librarian; Prince, clerk. Each copied the other's duties into the same blank book and signed his own. This was the record book, kept by the clerk, and in another book, kept by the librarian, were recorded the books borrowed and returned. Each book contained an inventory of the library.[14]

Ever since Benjamin Franklin had founded the first proprietary library in the Colonies in 1731, such libraries had been rapidly growing in number. On the eve of the Revolution there were thirty-one in New England alone.[15] Salem had had a Social Library since 1760, the outgrowth of an evening club which had met on and off for ten years for the discussion of literary and philosophical subjects. Prominent in the foundation of the Salem Social Library was Dr. Edward A. Holyoke, and the Reverend Thomas Barnard (father of a founder of the Philosophical Library and predecessor of Prince at the First Church) had been a member of the club out of which it grew.[16] Thus there was ample precedent—local as well as national—for the founders of the Salem Philosophical Library to build upon. Yet it is difficult to see why they chose to establish a separate institution, since the Social Library was by no means deficient in scientific books. Since most of these were treatises, the serials which made up Kirwan's collection might have made a worthwhile complement. Two reasons

14. Both books are now in the Essex Institute in Salem.

15. Charles K. Bolton, *Proprietary and Subscription Libraries* (*Manual of Library Economy*, Chapter I) (Chicago, 1912), 2; C. Seymour Thompson, *Evolution of the American Public Library, 1653-1876* (Washington, 1952), 35, 54. Franklin's library is still active as the Library Company of Philadelphia. There was a similar movement going on at the same time in England.

16. The records of the Social Library are also in the Essex Institute. I have not consulted them but have followed the account in Harriet S. Tapley, *Salem Imprints, 1768-1825* (Salem, 1927), 220-247.

suggest themselves. First, the Philosophical Library was originally founded as a working library for practising scientists, or scientific amateurs. The larger Social Library formed the cultural and intellectual center of the town of Salem, but it was by no means a center of active scientific observation and discussion. Second, two of the most active among the scientific amateurs of the Philosophical Library—Willard, to whose initiative the purchase of the Kirwan collection was due, and Cutler—did not live in Salem.

Like most proprietary libraries of the period, the Philosophical Library placed severe restrictions on its membership. No one might be a member without purchasing a share and receiving the unanimous consent of all the other members. No one might join who lived more than six miles from Beverly Ferry, nor might he remain a member, unless he were one of the founders, if he moved more than ten miles away. Restricted also was the borrowing of books. None could be lent except to another member, none could be kept more than three months, no more than four could be borrowed at once, and a careful set of priorities for reserving books had to be observed. Fines were agreed upon for all violations. A day was appointed for an annual meeting, at which a vote was to be taken whether new members might be admitted during the ensuing year. (At the first meeting the vote was against admitting them.) All these provisions were embodied in the covenant which each of the founding members signed. Willard signed a receipt to the Company for the books,[17] and an institution important in the history of American science thus began. Each of the members—except Willard, in whose house the books were stored—appears to have taken books away from this first meeting. The preference was for recent volumes of the *Philosophical Transactions*, though Prince borrowed Volume One of Boyle.[18]

The first change in the library's organization was occasioned by the election of Willard as President of Harvard College, an office which he took up in December, 1781, after receiving the consent of his parishioners to leave them.[19] He accordingly resigned as librarian of the Philosophical Library. On 7 January 1782 a

17. Record Book. The covenant articles are reprinted in Wheatland, "Historical Sketch," 177-9.

18. Information concerning books borrowed has been taken from the Librarian's Book. The entries are sometimes difficult to interpret.

19. Sidney Willard, *Memories*, 65-6. Stone, *History of Beverly*, 233-4.

meeting of the proprietors chose Prince librarian and Holyoke clerk. Barnard and Orne, the only other members present, were chosen a committee to arrange the transportation of the books from Willard's house in Beverly to Prince's in Salem. On 15 March Prince receipted for them.[20] At this meeting Barnard was thanked for his gift of Harris's *Lexicon Technicum*.[21]

When the company gathered for their annual meeting on 25 June, they found their records in disorder. The dislocation of the library had made it impossible for normal circulation to be maintained. All fines due were therefore forgiven, and the rules were changed to require that books be returned only at annual meetings, unless someone else wanted them, in which case they were to be returned to the librarian if they had been borrowed three months or more. A fine was to be levied if the books were not returned at the annual meeting. The decision of the previous year not to admit members was reversed, and thereafter they were welcomed into the company. None came for another year.

Who were these founding members, and what importance did they have in American and world science? Six were graduates of Harvard College and the seventh, of Yale. Willard, Holyoke, and Orne were among the founding members of the American Academy of Arts and Sciences in 1780; Cutler, Fisher, and Prince joined soon afterwards; Barnard, sometime later.[22] Of the physicians all three enriched the medical literature, two were incorporators of the Massachusetts Medical Society, and one taught medicine to many of Massachusetts' most famous physicians. Of the clergymen one was a teacher of Count Rumford, whose only rival as the greatest American-trained scientist of the period is Franklin. One was distinguished both as an amateur astronomer and as a president of Harvard College, and he did much to further American participation in worldwide scientific intercourse. One was a distinguished botanist, though he is best known for his political endeavors. The last was the foremost maker and purveyor

20. Record Book and Librarian's Book. These entries are printed in Wheatland, "Historical Sketch," 179.

21. John Harris, *Lexicon Technicum*, 2v. (London). Volume I is Fourth Edition (1725); Volume II, Second Edition (1723).

22. American Academy of Arts and Sciences, *Memoirs* (hereafter *M.A.A.S.*), I, v, xxi; II, Part 2, 163. William P. and Julia P. Cutler, eds., *Life, Journals, and Correspondence of the Reverend Manasseh Cutler, LL.D.*, 2v. (Cincinnatti, 1888), I, 85-6.

of scientific instruments in the United States. A detailed examination of the career of each of these men will help to bring out the significance to science of the Salem Philosophical Library.

Joseph Willard (1738-1804) had come to preach in Beverly in 1772 from Harvard College, where he had been tutor in Greek since 1766, a year after his graduation, and the senior member of the tutorial staff. He had been a Fellow of Harvard College since 1768.

While at Beverly Willard was instrumental in the founding of the American Academy of Arts and Sciences, which chose him corresponding secretary. In this office he corresponded with a number of European scientists, among them Richard Price, a pioneer actuary, Joseph Priestley, Jean-le-Rond D'Alembert, and Leonhard Euler. At Beverly also Willard made astronomical observations.

In 1781 Joseph Willard was chosen President of Harvard College by the Corporation and approved unanimously by the Overseers. During his administration the Medical School was founded, and steps were taken to establish a botanic garden. Willard also succeeded in raising the entrance requirements and increasing the number of fields of instruction. Harvard awarded him the S.T.D. degree in 1785; Yale, the LL.D. in 1791. He was elected a member of the American Philosophical Society shortly before his death, and he was also elected to the Königliche Gesellschaft für Wissenschaften of Göttingen.[23]

Willard as a scientist was thought by John Adams to be the equal of David Rittenhouse, the Philadelphia astronomer.[24] While this judgment serves rather to cut Rittenhouse down to size than to build up Willard, the latter may certainly be called a distinguished scientific amateur in an age when there were few professionals. He published five papers in the first two volumes of the American Academy's *Memoirs* and communicated many others. Three of Willard's papers included his own observations, made

23. For Willard's life see Sidney Willard, *Memories*, I, 17-219; Samuel Webber, "An Eulogy," *Prayer by the Rev. Dr. Lathrop . . . at the funeral of the Rev. Joseph Willard . . .* (Cambridge, 1804), 9-20; Stone, *History of Beverly*, 86-7, 229-235; Card Catalog, Harvard University Archives. Willard's correspondence has been published by the Massachusetts Historical Society in its *Proceedings*, XXXVII (1903), 3ff. and XLIII (1909-10) 6ff.

24. *Dictionary of American Biography* (hereafter *D.A.B.*), XX, 234-5.

both at Beverly and Cambridge. Their titles explain the contents: "Observations made at Beverly, Lat. 42° 36′ N. Long. 70° 45′ W. to determine the Variation of the magnetical Needle" (*M.A.A.S.*, I, 318-321), "Observations of the Transit of Mercury over the Sun's Disc, November 5th, 1789" (*Ibid.*, II, Part 1, 22-36), and "A Memoir, containing Observations of a Solar Eclipse, October 27, 1780, made at Beverly: Also of a Lunar Eclipse, March 29, 1782,—of a Solar Eclipse, April 12, and of the Transit of Mercury over the Sun's Disc, November 12, the same Year, made at the President's House in Cambridge" (*Ibid.*, I, 129-142). His other two papers were computational: "A Table of the Equations to equal Altitudes, for the Latitude of the University of Cambridge, 42° 23′ 28″ N. with an Account of its Construction and Use" (*Ibid.*, I, 70-80) and "A Method of finding the Altitude and Longitude of the nonagesimal Degree of the Ecliptic; with an Appendix, containing calculations from corresponding Astronomical Observations, for determining the Difference of Meridians between Harvard-Hall, in the University of Cambridge, in the Commonwealth of Massachusetts, and the Royal Observatories at Greenwich and Paris" (*Ibid.*, I, 1-61). The latter has been called "an elegant determination of the longitude of Cambridge."[25]

Willard used the Philosophical Library very little after he moved to Harvard, whose library contained everything Kirwan's did except the *Miscellanea Berolinensia*. Before he sold his share in 1795 his borrowings were few. From 1784 to 1788 he borrowed volumes 69-72 (1779-82) and 74-76 (1784-86) of the *Philosophical Transactions*, though the first group of these are known to have been in the Harvard College Library in 1790.[26] Nevertheless, Willard had complete access to the entire Kirwan collection during the eight months it was kept in his home, and it is probable that his scientific interests were stimulated more during this period than later when his duties were heavier.

In his observations of the eclipse in October, 1780, Willard had been joined by Cutler of Ipswich Hamlet and Prince of

25. I. Bernard Cohen, *Some Early Tools of American Science* . . . (Cambridge, 1950), 17.

26. *Catalogus Bibliotecae Harvardianae Cantabrigiae Nov-Anglorum* (Boston, 1790), 150-151.

Salem,[27] and he turned first to them for assistance in purchasing the Kirwan library. Manasseh Cutler (1742-1823) was a man of remarkable versatility. A graduate of Yale (A.B. 1765, A.M. 1768), he served successively as schoolteacher, storekeeper, and lawyer before becoming minister at Ipswich Hamlet (Later Hamilton) in 1771.

During the Revolution Cutler served as an Army chaplain, and after 1778, when he studied with Dr. Elisha Whitney, he practiced medicine as well. After the war he established a boarding school, and he was one of the originators of the Ohio Company in 1786. He conducted negotiations for the Company with the Continental Congress in 1787, and is credited with some assistance to Nathan Dane (see below) in drafting the Northwest Ordinance of 1787. He spent only about a year at the Ohio Company settlement at Marietta, but his interest in colonization led him into politics. He served as a member of the Massachusetts House of Representatives in 1800 and of the Seventh and Eighth Congresses from 1801 to 1805. He died in Hamilton 28 July 1823. In 1781 he was chosen a Fellow of the American Academy; in 1794, a member of the American Philosophical Society; in 1785, an Honorary Fellow of the Massachusetts Medical Society. Yale awarded him the LL.D. degree in 1789.[28]

Lawyer, businessman, minister, physician, colonizer, politician —Cutler was a scientist as well. He is best known as one of the pioneers in American botany, but he published two astronomical papers and a meteorological one, and his diary shows that he experimented with an electrical machine as well. His non-botanical papers are: "Observation of the Transit of Mercury over the Sun, November 12, 1782, at Ipswich" (*M.A.A.S.*, I, 128), "Observations of an Eclipse of the Moon, March 29, 1782, and of an Eclipse of the Sun, on the 12th of April following, at Ipswich, Lat. 42° 38′ 30″." (*Ibid.*, 162-4), and "Meteorological Observations at Ipswich in 1781, 1782, and 1783, etc." (*Ibid.*, 336-371), including a list of the prevalent diseases during the periods

27. M.A.A.S., I, 130.

28. For Cutler's life see Cutler, *Life, Journals, and Correspondence, passim; Biographical Directory of the American Congress* 1774-1949 (hereafter *B.D.A.C.*), House Document 607, 81st Congress, Second Session (Washington, 1950), 1048; *D.A.B.*, V, 12-14; Harvard University, *Quinquennial Catalogue of the Officers and Graduates*, 1636-1930 (hereafter *H.U.Q.C.*) (Cambridge, 1930).

of the observations. None of these papers is of much importance, but his first botanical paper, "An Account of some of the vegetable Productions, naturally growing in this Part of America, botanically arranged" (*Ibid.*, 396-493) represents "the first description of importance of the indigenous plants of New England."[29] Cutler's other work in natural history includes assistance (with William Dandridge Peck) to Jeremy Belknap in the appropriate section of his *History of New Hampshire* (Volume III, 1792), six pages on birds in Jedediah Morse's *Geography* (Sixth Edition, 1812), and "Observations on a singular natural production, in which one part appears to be a plant and the other an insect, etc." (*M.A.A.S.*, IIII, 161-4). Cutler was supposed to have been near completing his *magnum opus*, a complete study of the flora of New England, when a fire in his study about 1812 destroyed his manuscripts.

Cutler borrowed extensively from the Philosophical Library from 1781 to 1806. In this period he took out most of the volumes of the *Philosophical Transactions*, the *Encyclopaedia Brittanica*, and Buffon's *Histoire Naturelle*. He also had some volumes of the French Academy's *Histoire*, Ingenhousz's *Experiments on Vegetables*, and the *Repertory of Arts*. He appears to have kept the first volume of Priestley's *Vision, Light, and Colours* continuously from 1785 to 1789! Prior to the formation of the Philosophical Library, Cutler borrowed books from Harvard College with the special permission of the Corporation.[30]

John Prince (1751-1836) held a unique position in late eighteenth and early nineteenth century America as the outstanding maker, purveyor, and repairer of scientific instruments. From his headquarters in Salem, where he was pastor of the First Church, he carried on an extensive correspondence, largely as intermediary between the London instrument makers and the American college or academy officials who wished to acquire "a philosophical apparatus." Prince improved the design of many pieces of equipment, and his name was in high repute among the best makers in London.

The son of a mechanic, Prince was apprenticed to a pewterer and tinman before going to Harvard, where he studied natural

29. Max Meisel, *A Bibliography of American Natural History*, 3v. (Brooklyn, 1924-9), II, 42.

30. Librarian's Book. Card Catalog, H. U. Archives.

philosophy under John Winthrop. After his graduation in 1776 he taught school and then studied theology in Bradford with the Reverend Samuel Williams, subsequently Winthrop's successor as Hollis Professor of Mathematics and Natural Philosophy. Prince preached in Salem from 1779 until his death, and he bequeathed his 453-volume theological library to his successors at the First Church.[31]

His improvement in the air pump (1783) is the subject of Prince's only scientific paper, "An Account of an Air-Pump on a new Construction, etc." (*M.A.A.S.*, I, 497-519). This publication led to the naming of the improved pump "the American air pump." Prince's improvements in the lucernal microscope (1792 and 1795) were communicated in letters to the London instrument maker George Adams, who does not appear to have given public credit to Prince. His other improvements were to the equatorial (1795), the magic lantern (1797 and 1801), and the kaleidoscope (1818). When Benjamin Silliman went to London to obtain a set of instruments for Yale, he found Prince in high esteem among makers of instruments. When the instruments reached Yale, Prince was called upon to examine them. They "having met his decided and warm approbation, this judgment when reported to the London artist, was pronounced by him to be the highest encomium that could be bestowed."[32]

Since the Philosophical Library was kept at Prince's house from 1782 to 1810, the short list of books "borrowed" by him cannot reflect his use of the library. Undoubtedly its resources were extremely important in teaching him the state of the instrument-making art and must have been necessary for his acquisition of the knowledge to suggest important improvements in design.

Willard told Prince about the Kirwan library, and Prince told the Reverend Thomas Barnard (1748-1814) and Dr. Edward Augustus Holyoke. Barnard had come to Salem in 1755 when his father, also Thomas Barnard, came to Salem's First Church. The younger Barnard had preceded Prince to Harvard, where he

31. For Prince's life see Charles W. Upham, "Memoir of Rev. John Prince." There are two versions, one in Massachusetts Historical Society, *Collections*, Series 3, V (1836), 271-82 and the other in *American Journal of Science*, Series 1, XXXI (January 1837), 201-22. The latter is longer and contains two pages of comments by Benjamin Silliman, the *Journal's* founder and editor. Prince's portrait is the frontispiece to Volume 31.

32. Benjamin Silliman in *Am. J. Sci.*, Ser. 1, XXXI, 221-2.

graduated in 1766 and later received the A.M. degree, and to Bradford, where he was a pupil of Samuel Williams. The younger Barnard returned to Salem in 1771 preaching first as a candidate with his father, then at the North Church, formed in 1773. In 1793 Barnard received the D.D. degree from Brown and Edinburgh Universities. His friendship with Prince had begun in 1779 when the latter came to Salem to succeed Barnard's father who had died three years before.[33]

None of Barnard's publications was scientific, but his importance to science is nonetheless considerable. On his graduation from Harvard in 1766 Barnard returned to Salem to teach school. In the fall of that year Benjamin Thompson, later Count Rumford of the Holy Roman Empire, was apprenticed to John Appleton, a merchant of Salem. Rumford lived with his master's family and worshipped with them at the First Church. There Rumford "was taught algebra, geometry, astronomy, and even the higher mathematics,"[34] by the young schoolmaster, whose influence on the future physicist and inventor was probably as great as that of John Winthrop, whose lectures he attended.

However, Barnard's instruction of Rumford has nothing to do with the Philosophical Library, from which Barnard's borrowings were regular but few. Treatises predominated over serials among the books he read, as might be expected with one who made no contributions himself. Barnard's library of between five and six hundred volumes was sold shortly after his death. Only 26 titles were scientific. Of these most were simple navigation and mathematics texts, three were astronomical works, and one was the English translation of Macquer's *Chemistry*.[35]

Dr. Edward Augustus Holyoke (1728-1829) was an outstanding physician. During his career the medical profession improved its organization and changed its methods of training; he was important in movements for both. He and his pupils had a pre-

33. For Barnard's life see John Prince, *A Sermon, preached before the North Church . . . in Salem, October 16, 1814, on the death of their pastor, the Rev. Thomas Barnard, D.D. . . .* Second Edition (Salem, 1814).

34. George E. Ellis, *Memoir of Sir Benjamin Thompson, Count Rumford . . .* (Boston, 1871), 20.

35. *Catalogue of a large collection of books, belonging to the library of the late Reverend Thomas Barnard, D.D. . . .* [Salem, 1815].

dominant influence on medicine in Boston until nearly the middle of the nineteenth century.

Holyoke grew up in Cambridge where his father was President of Harvard College. Graduating in 1746, the younger Holyoke taught briefly before he began the study of medicine. Completing his studies in 1749, Holyoke came to Salem, where he remained until his death at the age of 100. He was never more than fifty miles from his birthplace, and he averaged over 11 visits a day for his 75 years of medical practice. He received Harvard's first honorary M.D. degree in 1783 and the LL.D. in 1815.

An incorporator of the American Academy in 1780, Holyoke served as its third president from 1814 to 1820. He was an incorporator of the Massachusetts Medical Society in 1781, and the statute of incorporation named him as the convener of the first meeting. He was chosen the first president of the Society, serving from 1782 to 1784, and he held the same office again in 1786 and 1787. He was a founder of the Salem Social Library and an incorporator of the Athenaeum, which he served as its first president from 1810 to 1829. Holyoke seems never to have sought these distinctions. He was content to be a family physician, with a large practice that included very little surgery but much obstetrics. A measure of his popular esteem is that, though an avowed if mild Tory, he was not in any way molested during the Revolution.[36]

Holyoke's principal service to medicine was the training of physicians. He had 35 pupils from 1762 to 1817. The most famous of these was James Jackson, later a professor at Harvard Medical School and president of the Massachusetts Medical Soviety. John Warren, the first professor in the Harvard Medical School, began his medical practice in Salem under the watchful eye and encouragement of Holyoke.[37] Jackson later said of him, "In good solid medical learning, few men in our country have surpassed him."[38]

36. For Holyoke's life see *Memoir of Edward A. Holyoke, M.D. LL.D.* (Boston, 1829) . . . also in Massachusetts Medical Society, *Medical Communications*, IV, 185-260 (1829); John Brazer, *A Discourse . . . at the interment of Edward Augustus Holyoke* . . . (Salem, 1829); Thomas F. Harrington, *The Harvard Medical School, A History* . . . 3v. (New York & Chicago, 1905), I, 241-51.

37. *Memoir*, Appendix L. *Harrington, Harvard Medical School*, I, 253-4.

38. Brazer, *Discourse*, 21.

Holyoke also made a number of contributions to the medical literature. Those which are entirely medical in content are: "An Account of an Uncommon Case of Emphysema; and an external Abscess whose Contents were discharged by coughing" (*M.A.A.S.*, II, Part 1, 186-191), "A letter . . . respecting the Introduction of the Mercurial Practice in the vicinity of Boston, Mass." (*Medical Repository*, I, 500 ff. (July, 1797)), "An easy and cheap method of preparing Sal Aeratus" (*Ibid.*, II, (April, 1798)), and "The History of a Retroverted Uterus" (Mass. Med. Soc., *Medical Communications* II, Part 2, 13-18). The common belief—in the days before the germ theory of disease—that many infectious diseases were caused by "miasmas" or climatic factors led Holyoke into a close study of meteorology, especially in its relations to epidemics. He kept a daily record of the weather for almost eighty years, and he published a number of papers on the relationship between weather and disease and mortality. These papers are: "A Bill of Mortality for the Town of Salem, for the Year 1782" (*M.A.A.S.*, I, 546-550), "An Account of the Weather and of the Epidemics, at Salem, in the County of Essex, for the Year 1786. To which is added, a Bill of Mortality, for the same Year" Mass. Med. Soc., *Med. Commun.*, I, 1-40), "An Estimate of the Excess of the Heat and Cold of the American Atmosphere beyond the European, in the same parallel of Latitude: To which are added, some Thoughts on the Causes of this Excess" (*M.A.A.S.*, II, Part 1, 65-88), "A Table of Results, from a Course of Observations made on the Heat of the Atmosphere, etc." (*Ibid.*, 89-92), "On Meteorological Observations and Bills of Mortality" (*Ibid.*, Part 2, 58-61), and "A Proposal for adjusting a new scale to the mercurial thermometer" (*Ibid.*, III, 51-56). Holyoke also observed transits of Venus (1769) and Mercury (1782) and experimented on evaporation phenomena, but he did not publish his results. He was particularly interested in the Aurora Borealis, and two letters from him to Silliman on the subject were published in the *American Journal of Science* (XIV, 98-101).[39]

From the Salem Philosophical Library Holyoke borrowed an average of about five volumes a year from 1781 to 1808. These

39. The original manuscript of one of these letters is in the Harvard Medical School Library. Holyoke dictated them when he was 99 years old.

were mostly of the *Philosophical Transactions,* though he occasionally had a volume of Buffon or some other book. In 1808 he began reading the *Philosophical Magazine* at the rate of about six volumes per year, and he continued to do so until the Library was wound up in 1810.

Manasseh Cutler had got Dr. Joshua Fisher (1748-1833) of Beverly to join the Philosophical Library. Fisher graduated from Harvard College in 1766, intending to enter the ministry. After two years of schoolteaching, a disease of the lungs led him to change his chosen profession to medicine, which he practiced successively in Ipswich, Salem, and Beverly. During the Revolution Fisher served as a surgeon on a Marblehead privateer, and in 1788 he became superintendent of a cotton factory—the first in the country—which failed. His medical practice was small, and he was active in politics as an associate of George Cabot and probably of his cousin Fisher Ames.

Fisher's service to science consisted in his bequest to Harvard College for the establishment of the Fisher Professorship of Natural History, first occupied in 1842 by Asa Gray. His services to medicine were more extensive. A Fellow of the American Academy after 1785, he published in Volume One of the *Memoirs* an excellent account of an autopsy, "Case of a remarkably large Tumour, found in the Cavity of the Abdomen" (537-41). He was a member of the Massachusetts Medical Society after 1782 and became vice-president in 1804. In 1815 Fisher was chosen president of the Society, following John Warren, and he served until 1823. During his administration the Society acquired the exclusive right to pass on candidates for licenses to practice medicine. Fisher gave the Society's annual discourse in 1806, "A Medical Discourse on several Narcotic Vegetable Substances" (Mass. Med. Soc., *Med. Commun.,* I, 1-13), in which he described his treatment of Willard for jaundice. He also published "Some Observations on Worms infesting the Human Body" (*Ibid.,* 49-56).[40]

From 1781 to 1793 Fisher borrowed extensively from the Philosophical Library. Up to 1785 he went rapidly through the

40. For Fisher's Life see Walter Channing, *A brief Memoir of Joshua Fisher, M.D.* (Boston, 1833); Walter L. Burrage, *A History of the Massachusetts Medical Society* (n.p., 1923), 104-5.

Philosophical Transactions and Buffon's *Histoire Naturelle*, and thereafter he alternated a few volumes of the former with a number of treatises on mathematics, physics, and botany.

Dr. Joseph Orne (1749-1786) was the last to join of the founding members of the Salem Philosophical Library. After graduating from Harvard College in 1765, he became Holyoke's second pupil, remaining with his preceptor for five years. In 1770 he began his practice in Beverly, and he returned to Salem in 1777. He was an incorporator of both the American Academy and the Massachusetts Medical Society, but his promising career was cut off by his early death.[41]

Two medical papers written by Orne were published posthumously. They are: "Experiments made with the common Cow Parsnip (sphondylium vulgare hirsutum, Park. C.B.) in cases of Epilepsy" (Mass. Med. Soc., *Med. Commun.*, I, 48-55) and "An Experiment for determining the Expediency of the Sigaultian Operation" (*Ibid.*, 93-95). In the short period of his membership of the Philosophical Library, Orne borrowed only three volumes, all of the *Philosophical Transactions*.

The annual meetings of the Philosophical Library from 1783 to 1809 were devoted to admitting new members, determining the value of a share in the library, and assessing the amounts necessary to pay for new books and other items. Most of the additions to the library are recorded in the votes of the annual meetings, but some books turn up in the librarian's inventory with no indication of how they came into the library.

At one of the 1781 meetings, John Prince gave the library a copy of Ames' *Typographical Antiquities*.[42] Barnard's gift of Harris's *Lexicon* in 1782 has already been mentioned. In the same year Fisher borrowed a copy of Bayle's *Historical and Critical Dictionary*,[43] which is not listed in the catalog. The 1783 meeting saw the first new member admitted, Joseph Blaney (1730-

41. For Orne's life see Wheatland, "Historical Sketch," 276; *H.U.Q.C.*

42. Joseph Ames, *Typographical Antiquities: being an Historical Account of Printing in England . . .* (London, 1749). All titles except where noted have been verified by examination of the volumes themselves.

43. *The Dictionary historical and critical of Mr. Peter* [*Pierre*] *Bayle*, Second Edition, 5v. (London, 1734-8). I did not look for a copy in the Athenaeum.

1786), one of the original members of the Salem Social Library.[44] His dues were used to fill out the set of the *Philosophical Transactions,* since the Kirwan collection stopped with Volume 64 (1774). At the same time the first new purchases were voted. Barnard and Holyoke were to be a committee to purchase twenty-seven mathematical books from Fisher, and the members from Salem, to make a catalog of books to be bought from London for £6.

Sometime before Fisher's mathematical books were added to the Philosophical Library, a set of Buffon's *Histoire Naturelle* found its way into the collection.[45] It is impossible to identify with certainty the twenty-seven books purchased from Fisher, but they definitely included the works of Johann and of Jacob Bernoulli, Christian Wolf's *Elementa Matheseos Universae,* Newton's *Principia* (in the Geneva edition containing the papers on the tides with which Bernoulli, MacLaurin, and Euler won the French Academy's prize in 1740), L'Hospital's treatise on conic sections, and MacLaurin's *Treatise on Fluxions.* These titles account for eighteen volumes; the remainder and the books from London make up the following list: Leadbetter's *Astronomy,* Keill's *Astronomy,* Maupertuis' *Figure of the Earth,* Keill's *Introduction to Natural Philosophy,* Goldsmith's *Survey of Experimental Philosophy,* Rohault's *Physics,* Stewart's *Tracts Physical and Mathematical,* Smith's *Opticks,* Priestley's *Vision, light, and colours,* his *Electricity,* his *Experiments and Observations,* and Franklin's *Electricity.*[46] The Buffon was first borrowed[47] late in 1783 and the first of the London or Fisher volumes in 1784.

44. For Blaney's life see Wheatland, "Historical Sketch," 276 and *H.U.Q.C.*

45. [George Louis Leclerc, Comte de Buffon], *Histoire Naturelle,* 15v. (Paris, 1749-67).

46. *Jacobi Bernoulli Opera.* 2v. (Geneva, 1744). *Johannis Bernoulli Opera Omnia,* 4v. (Lausanne & Geneva, 1742); *Christiani Wolfii Elementa Matheseos Universae,* New Edition, 5v. (Geneva, 1732-41); Isaac Newton, *Philosophia Naturalis Principia Mathematica,* 3v. in 4 (Geneva, 1739-42). With a commentary by LeSeur and Jacquier. Marquis de L'Hospital, *Traité analytique des Sections Coniques, etc.* (Paris, 1720); Colin MacLaurin, *A Treatise of Fluxions. In Two Books,* 2v. (Edinburgh, 1742); Charles Leadbetter, *A Compleat System of Astronomy,* Second Edition, 2v. (London, 1742); John Keill, *An Introduction to the True Astronomy.* The copy which I examined in the Salem Athenaeum (Fourth Edition, London, 1748) has "Walter 1753" inscribed on the title page. William Walter apparently gave it to the Social Library in 1761 (Tapley, *Salem Imprints,* 230); M. [Pierre Louis Moreau] de Maupertuis, *The Figure of*

On 24 September 1783 a special meeting was held to elect Samuel Page (1749-1785) to membership.[48] Only Dr. Orne was absent. There is no record of the use to which Page's £13 fee was put.

Only Willard was absent from the annual meeting of 1784. A subscription was entered for the first volume of the American Academy's *Memoirs,* to which Willard, Holyoke, Cutler, Prince, and Fisher had contributed papers. Although Blaney's dues of the previous year were supposed to have been used to fill out the set of *Philosophical Transactions,* the members voted again to procure the missing volumes. Dr. Holyoke was thanked for the gift of a number of pamphlets: Arbuthnot's *Tables of the Grecian, Roman, and Jewish Measures,* Murdoch's *Mercator's Sailings,* Oliver's *Essays on Comets,* Stewart's *Distance of the Sun from the Earth,* and Winthrop's *Lecture on Earthquakes, Two Lectures on Comets,* and *Two Lectures on the Parallax and Distance of the Sun.* Since the Murdoch pamphlet and Winthrop's *Earthquakes* are bound together with them, Holyoke may also have given the copies of Knight's *Attraction and Repulsion* and Bird's *Method of Dividing Astronomical Instruments* which were in

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the Earth (London, 1738); John Keill was Savilian Professor of Astronomy at Oxford. The work was originally in Latin: *Introductio ad Veram Physicam.* It was translated into English as *An Introduction to Natural Philosophy.* The Athenaeum has copies of the Fourth Edition of each. The Latin (London, 1719) belonged to Rev. William McGilchrist, pastor of Salem's Episcopal church, St. Peter's and a member of the Social Library, who died in 1780. His copy may have been the one in the Philosophical Library, for the other (London, 1745) was given by William Walter to the Social Library in 1760; Oliver Goldsmith, *A Survey of Experimental Philosophy,* 2v. (London, 1776); *Jacobi Rohaulti Physica.* Annotated by Dr. Samuel Clarke. Fourth Edition (London, 1718). This copy also belonged to William McGilchrist; Matthew Stewart, *Tracts Physical and Mathematical* (Edinburgh, 1761); Robert Smith, *A Compleat System of Opticks in Four Books, etc.* (Cambridge, 1738); Joseph Priestley, *The History and present state of Discoveries relating to vision, light, and colours* (London, 1772); Joseph Priestley, *The History and Present State of Electricity with Original Experiments.* Third Edition, 2v. (London, 1775); Joseph Priestley, *Experiments and Observations relating to various branches of natural philosophy, etc.,* 2v. (London, 1779-81). This and Boyle's *Works* were the only titles in chemistry in the Library! Benjamin Franklin, *Experiments and Observations on Electricity,* Fifth Edition (London, 1774).

47. By Thomas Barnard.

48. For Page's life see Wheatland, "Historical Sketch," 276-277.

the Philosophical Library, but these two pamphlets may have been purchased from London.[49]

After 1784 interest in the Philosophical Library seems to have declined, perhaps as a result of the hard times and unrest in Massachusetts which led to Shays's Rebellion of 1786. No new texts were ordered until 1790. New shares declined from a high of £14 in 1784-5 to £10 in 1789, and they did not rise again until 1793 when the commerce of Salem had been stimulated by trade with the East Indies.[50] Only one person, Dr. Joshua Plummer, joined the Library between 1783 and 1790, and three members, Orne, Blaney, and Page died during this period. Plummer's entry into proprietorship is not even recorded in the minutes of annual meetings, but it must have occurred between June, 1787, and June, 1788, since he attended the latter but not the former. He was the only new member for ten years whose dues went into the Library's treasury; the rest bought up the shares of deceased or vacated members.

Hard times did not discourage the members from keeping up their collection of serials. They faithfully assessed themselves each year except 1785 for the annual volumes of the complete *Philosophical Transactions* and the periodic volumes of the abridged edition. In 1789 they voted to buy the general index, which had

49. Jo. Arbuthnot, *Tables of the Grecian, Roman and Jewish Measures, Weights and Coins: reduced to the English standard* (London, n.d.); Patrick Murdoch, *Mercator's Sailing, applied to the True Figure of the Earth . . .* (London, 1741); Andrew Oliver, jr., *An Essay on Comets . . .* (Salem, 1772). The copy in the Athenaeum is inscribed "Gift of the Author to the Social Library," but the records of the Philosophical Library show that all these pamphlets were bound together as they are now; Matthew Stewart, *The Distance of the Sun from the Earth Determined by the Theory of Gravitation* (Edinburgh, 1763); John Winthrop, *A Lecture on Earthquakes* (Boston, 1755); John Winthrop, *Two Lectures on Comets* (Boston, 1759). Part of the inscription "For Dr. Holyoke" has been cut off during binding; John Winthrop, *Two Lectures on the Parallax and Distance of the Sun, as deducible from the transit of Venus* (Boston, 1769); Gowin Knight, *An Attempt to Demonstrate, that all the phenomena in nature may be explained by two simple active principles, attraction and repulsion . . .* (London, 1748); John Bird, *The Method of Dividing Astronomical Instruments* (London, 1767). In the volume labelled "Philosophical Tracts, I" are Bird, Knight, Murdoch, and Winthrop's *Earthquakes*. The labelled "Philosophical Tracts, III" contains Oliver, Stewart, and the other two pamphlets of Winthrop. The pamphlets in "Philosophical Tracts, II" are known to have been added later.

50. The renewal of hostilities between Great Britain and France in the same year also contributed to Salem's prosperity.

been published in 1780 and to buy all volumes subsequently published without the need of a special vote for each. In 1786 they thanked the American Philosophical Society for the gift of Volume I of their *Transactions*, Volume II of which they purchased in 1787. The French Academy's *Histoire* was subsequently completed through the volume for 1790 (Kirwan's set had stopped with the 1761 volume), though no record was made of the acquisition.

Dr. Joshua Plummer (1756-1791) was the third of his family in succession to be a physician. He graduated from Harvard College in 1773 and studied medicine with his father, whom he succeeded. Plummer came to Salem in 1785, and his daughter Caroline was a great benefactor of the Salem Athenaeum. He published no scientific papers, but his manuscript notebook entitled "Observations, Experiments, Memorandums—and Extracts" contains entries relating to natural and medical phenomena and extracts from several books of natural history which may have been purchased from him by the Salem Philosophical Library (see below). The entries are dated from 1782 to 1787.[51]

Two of the Salem Philosophical Library's most eminent members were admitted at the annual meeting in 1790, the Reverend William Bentley (1759-1819) of Salem's East Church and Nathan Read, the Salem apothecary. Bentley had purchased Orne's share, apparently at Prince's suggestion, in April, 1790,[52] and was admitted with Read, who had purchased Page's share, at the annual meeting in June. At the same meeting the members voted to purchase Mahon's *Principles of Electricity*.[53]

The less well known of these two new members, Nathan Read (1759-1849) was almost as versatile as Manasseh Cutler. Though he published no scientific papers, he applied his training in science and his knowledge of its literature to some of the problems of the newly-emergent industrialism, thereby gaining a place for himself in the annals of American invention. After a few years of

51. For Plummer's life see Wheatland, "Historical Sketch," 277. Plummer's indexed manuscript is in Harvard College Library.

52. *The Diary of William Bentley, D.D.*, 4v. (Salem, 1905-14), I, 152-9. For Bentley's life see Joseph G. Waters, "A Biographical Sketch of Rev. William Bentley," *Diary of Bentley*, I, ix-xxi; *H.U.Q.C.*; and Card Catalog, H.U. Archives.

53. Charles, Viscount Mahon, *Principles of Electricity, etc.* (London, 1779).

sporadic schooling, he entered Harvard College in 1777 and graduated in 1781. He so distinguished himself in Hebrew as to be appointed to instruct the subject during the interim between the death of Professor Sewall and the appointment of Eliphalet Pearson as his successor. After graduation Read taught school in Beverly, where he lived in the house of Nathan Dane, and in Salem. In 1783 he was elected tutor of Harvard College, where he taught first Hebrew and then mathematics and physics. He resigned in 1787 to return to Salem, where he studied medicine with Dr. Holyoke for a year before taking over an apothecary's shop, apparently the same shop that Benjamin Thompson had frequented to make experiments with gunpowder some years earlier.[54] Read moved to Danvers in 1795, and in 1796 he became chief superintendent of the Salem Iron Factory, which for 11 years made iron articles for shipbuilders. Read was a member of the Sixth and Seventh Congresses (1800-1803) to which he was chosen on the resignation of Samuel Sewall. In 1802 he was appointed a judge of the Essex County Court. He moved to Belfast, Maine, in 1807, and he presided as Chief Justice of the Hancock County Court for many years before his death on 20 January 1849. He was awarded the A.M. degree by Harvard in 1784 and Dartmouth in 1787.[55]

In spite of his attainments in other fields, Read's chief accomplishments were as an engineer-inventor. As early as 1788 he became interested in the problem of applying steam power to land- and water-locomotion. Aware of the failures of Fitch and Rumsey in the latter, Read attempted to improve the machinery which he felt was at fault. He appears to have been the first to build multitube boilers, both fire-tube and water-tube types, and he also improved the steam-engine cylinder. These improvements allowed him to build one of the earliest high pressure engines, which he proposed to apply to steam carriages and steamboats. The former was the subject of a patent application made by Read to Congress in 1790 and later withdrawn on account of ridicule. In 1789

54. Daniel A. White, *An Eulogy on the life and character of Nathaniel Bowditch* . . . (Salem, 1838), 72.

55. For Read's life see David Read, *Nathan Read, etc.* (New York, 1870); "Autobiography of Hon. Nathan Read . . . " *The New-England Historical and Genealogical Register,* L (October 1896), 434-436; *H.U.Q.C.;* Card Catalog, H.U. Archives.

Read constructed a steamboat driven by paddle wheels. His designs received the approval of the American Academy, which elected him a Fellow in 1791. Read applied to Congress for a patent on his steamboat in 1789-90, and while in New York he lived with Manasseh Cutler and explained his steam engine to John Stevens. At this time Read seems to have learned that his experiments with paddle wheels had been anticipated in France, and he accordingly changed his patent application to cover a chain drive instead. Patents were granted in 1791—the first in the United States—to Read, for his boiler and cylinder improvements, and to Fitch, Rumsey, and Stevens for various aspects of steam propulsion applied to navigation. But after the grant of his patent Read seems to have become discouraged, perhaps by the lack of financial backing.

Shortly after Read moved to Danvers in 1795 he built a combined bridge and dam over Waters' River, and in 1797 he constructed and put into use at the Salem Iron Factory a nail cutting and heading machine which was patented in 1798. He appears to have turned his attention to other affairs after 1800, but his continued interest in matters of science is shown by his correspondence with Parker Cleaveland of Bowdoin College. Towards the end of his life Read looked back on his inventions in steam propulsion. He wrote in 1834:

> I was too early in my steam projects. The country was then poor; and I have derived neither honor nor profit from the time and money expended on them. But it is gratifying to know that the simple machinery which forty-five years ago (without any knowledge of its having ever been used for that purpose) I selected as the most eligible for propelling boats through the water, has been since that time successfully used in every quarter of the globe for that purpose.[56]

Read's work on steam propulsion antedated his membership in the Philosophical Library, but the Library's collections may have contributed to his nail making-machine.

56. Quoted in D. Read, *Nathan Read*, 184. This account by his nephew gives Read considerable credit for anticipating the high-pressure steam engine, but Read's accomplishment has been virtually ignored by present-day writers (e.g., appropriate sections in Charles Singer, *et al.*, *A History of Technology*, make no mention of him).

The importance of Bentley and Read to the Philosophical Library and to science lay less in their own contributions than in their introduction to the use of the Library of Nathaniel Bowditch, the first American mathematician of note. Bowditch's father Habbakuk, a sea captain whose financial ruin in the Revolution led him to drink and coopering, joined Bentley's East Church in 1791.[57] Nathaniel must have first come to the minister's notice at this time. Read's interest in Nathaniel may have been stimulated from a family connection, for Read's mother-in-law was first cousin to Habbakuk Bowditch. Prince, too, probably took an interest in young Bowditch, several of whose brothers and sisters were baptized at the First Church. At the Philosophical Library's meeting of 1791 it was voted "That Nath'l Bowditch have the Privilege of the Philosophical and Mathematical books of the Library to use them in the town of Salem only for the year ensuing, he being subject to the rules of the company on the use of the books."[58] This unprecedented privilege was renewed by votes in 1792, 1793, and 1794. Nathaniel was at sea except for two months from January, 1795, to May, 1797. On his return he became a proprietor of the Philosophical Library, the only new member from 1787 to 1807 to buy a share directly from the Library.

Nathaniel Bowditch (1773-1838) was the most distinguished scientist among the Philosophical Library's members. His talents in mathematics had been marked from an early age, and though he had no formal schooling beyond the age of ten, his own perseverance and the interest taken in him by Salem scientists enabled him to become the first American mathematician of any importance and a theoretical astronomer of note. The chief accomplishment of Bowditch's scientific career, an avocation pursued in the time left over from his successive efforts as supercargo and navigator, insurance company president and actuary, and "Massachusetts trustee" (he was the first of the species), was his annotated translation of Laplace's *Mécanique Celeste*, prepared from 1814 to 1817 but not published until much later. This monumental if unoriginal work belongs to Bowditch's later

57. *Diary of Bentley*, I, 333. Harold Bowditch, "The Buildings Associated with Nathaniel Bowditch (1773-1838)," E.I.*H.C.*, LXXIX (July 1943), 205-221.

58. Record Book, quoted in Wheatland, "Historical Sketch," 179.

period as a member of the Salem Athenaeum (1810-1823) and a resident of Boston (1823-1838), as does his paper "On the motion of a pendulum suspended from two points" (*M.A.A.S.*, III, 413-436), the first treatment of what are now known as "Lissajous figures" and probably the first piece of original mathematical research by an American. We shall consider here only his early life and his scientific work during his membership of the Philosophical Library.

Nathaniel Bowditch was the fourth of Captain Habbakuk Bowditch's seven children. In 1775 the elder Bowditch lost his ship in the West Indies. His family thereafter was partially dependent on the charity of the Salem Marine Society, and of his seven children only two lived long enough to marry.

Nathaniel's schooling stopped in 1783 when he joined his father in the latter's coopering shop. In 1785 Nathaniel was apprenticed to Ropes and Hodges, ship chandlers, and he later worked in the shop of S. C. Ward, who may have bought out Ropes and Hodges. While at Ward's Nathaniel was befriended by Nathan Read, who had married the daughter of his father's first cousin, and in Read's apothecary shop he joined in some scientific experimenting. He came of age in 1794, terminating his apprenticeship, and that summer he assisted Captain John Gibaut in a survey of Salem in which William Bentley also joined. Gibaut was to take him to sea in E. H. Derby's ship *Henry*, but before the cruise started Gibaut and Derby had a falling out, and Captain Henry Prince took command. Bowditch sailed as supercargo in *Henry* to Mauritius from 1795 to 1796. He then made three voyages with Prince aboard *Astrea*, to Manila, Cadiz, and Batavia respectively, from 1796 to 1800. This was the heyday of the Salem East Indies trade, when the Massachusetts seaport was the pepper entrepôt of the world. Bowditch terminated his seagoing career with his own command, *Putnam*, taking her to Sumatra in 1802 and making his home port safely in a blinding snowstorm in 1803. By this time Bowditch had established a considerable reputation as a navigator as well as a shrewd businessman, and he retired from the sea for good, becoming an insurance company president in Salem until 1823, when he moved to a similar post in Boston in a company whose trust business soon outgrew insurance as a source of revenue. During his lifetime he served Harvard as

an Overseer (1810-26) and Fellow (1826-38) and the Boston Athenaeum as trustee (1826-33).[59]

Nathaniel Bowditch's early scientific accomplishments may be considered under two headings, applied and pure. In applied science, Bowditch wrote what soon became and has remained the standard work on navigation. During his early voyages, he had patiently checked the calculations and tables in John Hamilton Moore's *The New Practical Navigator*. He found several thousand errors, mostly minor, and traced some of them back to Hutton's *Logarithms* and Maskelyne's *Tables requisite with the Nautical Almanac*. Two pirated editions of Moore were published in Newburyport with Bowditch's revisions, and in 1802 Bowditch's own text, *The New American Practical Navigator*, came out and soon swept the field.[60] In pure science, Bowditch contributed papers to the American Academy's *Memoirs*, the *Monthly Anthology*, and Robert Adrain's periodical *The Analyst*. Though the first of these is on a method of correcting lunar observations which was included in the *Practical Navigator*, the rest dealt with more theoretical astronomical and mathematical subjects. Bowditch's publications during the period of his membership in the Philosophical Library form about one-third of his total titles, but considering the enormous quantity of material in his translation of Laplace, they do not bulk large in his total output. His publications have been considered elsewhere[61] and will not be further dealt with here.

No one borrowed more books from the Philosopical Library than Nathaniel Bowditch. There are no records of his borrowings before 1797, when he bought a share, but his reading prior to that year may be discovered by examining the first two of his

59. There is a modern biography of Bowditch: Robert E. Berry, *Yankee Stargazer. The Life of Nathaniel Bowditch* (New York, 1941). My account is drawn from White, *Eulogy;* Bowditch, "Buildings"; John Pickering, *Eulogy on Nathaniel Bowditch, LL.D.* . . . (Boston, 1838); Alexander Young, *A Discourse on the Life and Character of the Hon. Nathaniel Bowditch* . . . (Boston, 1838); and Nathaniel I. Bowditch, *Memoir of Nathaniel Bowditch, by his son,* 3rd ed. (Cambridge, 1884).

60. For an account of Bowditch's *Navigator* see Harold L. Burstyn, *At the Sign of the Quadrant* (Mystic, Conn., 1957).

61. Raymond C. Archibald, "The Scientific Achievements of Nathaniel Bowditch," A *Catalogue of a Special Exhibition of* . . . *Nathaniel Bowditch* 1773-1838) (Salem, 1937), 7-16. Pages 11-16 contain a bibliography of Bowditch's publications.

"Commonplace Books."[62] Before he gained access to the Philosophical Library collections Bowditch had made copious extracts from all the scientific books he could lay his hands on. These extracts were probably of great assistance to him during the long sea voyages when he had considerable time for study but few books. His earlier study of secondary works and dictionaries prepared him well to benefit from studying the original papers, and he went right through all the serials in the Library, copying all the mathematical and astronomical papers that he could find. When the records begin in the summer of 1797, we find Bowditch taking out the most recent volumes of the *Philosophical Transactions* two at a time and keeping them for about three weeks each. He continued to borrow at the same rate until 1809, except for the periods when he was at sea. In addition to serials, he also borrowed important texts such as Newton's *Principia* and the works of both Bernoullis.

Bowditch's fame soon spread beyond Salem. In 1797 he began a correspondence with Joseph Willard to send him the paper on corrections to lunar observations referred to above and another exposing the errors of a paper by James Winthrop, librarian of Harvard College, which had been published in Volume Two, Part 1, of the American Academy's *Memoirs*. Bowditch was elected to the Academy in 1799, the youngest person so honored, and in 1802 Harvard awarded him an honorary A.M. At the insistence of Theophilus Parsons, Chief Justice of Massachusetts and an amateur mathematician, Bowditch was chosen Hollis Professor in 1804 when Webber became President, but he declined. He later declined appointments at the University of Virginia (1818) and the United States Military Academy (1820). Though Bowditch himself declined to join any college faculty, his was probably the most important influence on Benjamin Peirce, who established mathematical research in American universities while serving as professor at Harvard.[63]

The 1791 meeting of the Philosophical Library saw a vote for

62. In the Boston Public Library, together with the rest of Bowditch's books and papers.

63. On Benjamin Peirce see Raymond C. Archibald, *Benjamin Peirce 1809-1880* (Oberlin, 1925), also in *American Mathematical Monthly* for January, 1925. Peirce assisted Bowditch with the proofs of his translation of Laplace and edited part of Volume Four after Bowditch's death.

the purchase of Pringle's *Discourses,* Spallanzani's *Dissertations,* and Jefferson's *Notes on Virginia.* The last two may have been purchased from Plummer, who died later in the year and is known to have had them from the extracts which he made. The *Transactions* of the Society of Arts was also obtained, but there is no record of it in the library. In 1792 the members agreed to buy the first American edition of the *Encyclopaedia Brittanica,* then being printed in Philadelphia, and in 1794 they assessed themselves for Volume II, Part 1, of the American Academy's *Memoirs,* in which Holyoke and Willard published papers. Sprat's *History of the Royal Society* entered the Library unrecorded just prior to the encyclopedia.[64]

Three new members joined at the annual meeting of 1795.[65] Dr. John D. Treadwell of Marblehead, purchaser of Fisher's share, was admitted immediately since he had already gained the assent of the absent members (only Barnard, Cutler, Holyoke, and Prince were present). Nathan Dane, purchaser of Willard's share, and the Reverend Joseph McKeen, purchaser of the late Dr. Plummer's share, both of Beverly, were to be admitted when the absentees consented.

Dr. John Dexter Treadwell (1768-1833) had been a pupil of Holyoke's for three years after his graduation from Harvard College in 1788. He was elected a member of the Massachusetts Medical Society in 1801 and a Fellow of the American Academy soon thereafter, but he appears not to have published any papers. Harvard gave him an honorary M.D. in 1815.

A few months after his admission to the Medical Society, Treadwell began a campaign to broaden the scope of the Society. Aided by his friend Samuel Sewall, later Chief Justice of Massachusetts, Treadwell drew up an act of reorganization which was subsequently adopted by the Society and passed by the General Court in

64. Sir John Pringle, *Six Discourses, etc.* (London, 1783); Abbe [Lazzarro] Spallanzani, *Dissertations relative to the Natural History of Animals and Vegetables,* New Edition, 2v. (London, 1789); Thomas Jefferson, *Notes on the State of Virginia,* Second American Edition (Philadelphia, 1794); *Encyclopaedia; or, A dictionary of arts, sciences, and miscellaneous literature, . . .* First American Edition, 18v. (Philadelphia, 1790-1798); Thomas Sprat, *The History of the Royal Society of London, etc.* I have not examined the copy in the Athenaeum to determine the edition, of which there were four: 1667, 1702, 1722, and 1734.

65. From this entry on, Dr. Holyoke's handwriting is very shaky. The entries for 1803 were made by someone else, probably Prince.

1803. He, together with Holyoke and Fisher, revised the Society's by-laws in 1805. Except for these services to the Medical Society, of which he was also a district councillor from 1805 to 1828, Treadwell appears to have been content with a large practice in Salem and heavy reading. Next to Nathaniel Bowditch (see above), Treadwell borrowed more books than any other member of the Philosophical Library. He served the Salem Athenaeum as trustee from 1810 to 1824.[66]

Nathan Dane (1752-1835) is well known for his services to American law and to the colonization of the Old Northwest. There is only one story of his interest in science, and it shows Dane rather a lawyer than a scientist:

> When at College he was Mathematicall Thesis Collector. He collected several rejected Cartesian Hypotheses. Dr Winthrop told him that the design of the publication was to shew the progress of knowledge, & that such theses could not answer the end. He refused to exchange them, & finally the Dr thought himself obliged to prepare theses to substitute in the places of those, which he had refused to accept.[67]

Joseph McKeen (1757-1807) came to preach at Beverly in Willard's old pulpit in 1784. His interests to a remarkable degree duplicated Willard's. He entered Dartmouth at the early age of 13 and graduated with "first honours" in 1774; the classics were his strongest subjects, followed by mathematics and astronomy. After graduation he taught school in Londonderry, and in the summer of 1780 he came to Cambridge for special instruction in mathematics, astronomy, and physics from Samuel Williams, who had left his pulpit in Bradford to become Hollis Professor of Mathematics and Natural Philosophy at Harvard. McKeen then assisted Eliphalet Pearson, later Hancock Professor at Harvard, at Phillips Andover Academy, studied theology, and preached as a candidate with a Presbyterian congregation before he became a Congregational minister at Beverly.

Bowdoin College was chartered by Massachusetts in 1794, but

66. For Treadwell's life see Burrage, *Massachusetts Medical Society*, 68-70; Howard A. Kelly and Walter L. Burrage, eds., *American Medical Biographies* (Baltimore, 1920), 1159; *H.U.Q.C.*; Card Catalog, H.U. Archives.

67. *Diary of Bentley*, I, 158. For Dane's life see *B.D.A.C.*, 1052; *D.A.B.*, V, 63-4; Stone, *History of Beverly*. I have not examined the Nathan Dane papers, which are in the Massachusetts Historical Society.

it did not open its doors at once. In 1801 McKeen was chosen president, and, though attempts were made to keep him in Beverly, he accepted the post and immediately began touring the New England colleges (and the one "university"—Harvard) in company with the only other member of the faculty, the professor of languages. He was inaugurated in 1802, and the two-man faculty began classes. They were joined by a tutor in 1804, and in 1805 the celebrated naturalist Parker Cleaveland joined the Bowdoin faculty. In 1804 Dartmouth awarded McKeen the D.D. degree.[68]

Joseph McKeen published two papers on bills of mortality in Volume Two of the *Memoirs* of the American Academy of Arts and Sciences of which he was a fellow. They were appended to Holyoke's "On Meteorological Observations and Bills of Mortality." The first, "Synopsis of several bills of mortality" (Part 2, 62-66) gives figures for deaths in a number of Massachusetts towns arranged by age. McKeen gives the totals for all of them, from which the reader may deduce that mortality was 38 per cent in the under-five age group and average life expectancy about 25 years! In his second paper, "Deductions from select bills of mortality" (Part 2, 66-70), McKeen shows that the mean annual increase in population in his selected communities would lead to a doubling of population in 38.7 years, "not so rapid as has been supposed."[69]

The Salem Philosophical Library had grown so large by the 1796 meeting that it was necessary to provide more bookshelves. In the same year Erasmus Darwin's *Botanic Garden* was ordered, and Ingenhousz' *Experiments on Vegetables* appeared in the Library prior to the arrival of the Darwin work.[70] Nathaniel Bowditch joined the Library in 1797, as noted above, and his dues were apparently used for the *Transactions* of the Royal Society of

68. For McKeen's life see William Jenks, *An Eulogy pronounced . . . at the funeral of the later Rev. Joseph M'Keen . . .* (Portland, 1807); Stone, *History of Beverly*, 235-238; *Diary of Bentley, passim; General Catalogue of Bowdoin College . . . .* Sesquincentennial Edition (Brunswick, 1950), 3.

69. *M.A.A.S.*, II, Part 2, 70.

70. [Erasmus Darwin], *The Botanic Garden, a poem, etc.*, 2v. (Dublin). Volume I is 1793; Volume II, Fourth Edition, 1796. The members had specified the Dublin edition; John Ingen-Housz [Jan Ingenhousz], *Experiments on Vegetables* (London, 1779).

Edinburgh[71] and the *Repertory of Arts and Manufactures*.[72] Although the members asked for the latter serial as published to date, they voted money again in 1799 and 1800 to complete the set. In 1804 the continuation of the Edinburgh *Transactions* was to be obtained.[73] Before these serials arrived, the Library acquired a copy of Costard's *History of Astronomy*[74] without recording its origin.

In 1798 the members voted to procure printed labels for each book. The labels were to state clearly that all books had to be returned before the annual meeting under penalty of a fine. Perhaps others had availed themselves of Bentley's excuse two years previously that he had not known of this rule.[75] Pennant's four-volume *British Zoology*[76] was the only book ordered at this meeting.

The annual meeting of 1799 was the first where the shares in the Library were valued in dollars. In 1793, the last time a valuation had been entered into the minutes, a share had stood at £12. Now it was valued at $45, and the annual assessment (the first since 1794) was also made in dollars. Another box for books was required, and the members agreed to get each volume of the Appendix to the *Encyclopaedia Brittanica*[77] as it became available. In 1800 Thomas Bancroft (1765-1807) bought Nathan Dane's share, and he was accordingly admitted.[78]

In 1801 the members voted to add Spallanzani's *Tracts* to the library, and in 1802 they added Fabricius' *Bibliotheca Graeca* in fourteen volumes, Taylor's edition of *Proclus* in two volumes, and Pennant's *Arctic Zoology* in three volumes.[79] These last three titles

71. The first five volumes, covering the years 1788-1799, were in the Library in 1810.

72. The 16 volumes of Series I (1794-1802) and 13 volumes of Series II (1802-1810) were in the Library in 1810.

73. This was probably Volume IV.

74. George Costard, *The History of Astronomy* . . . (London, 1767). Barnard was the first to borrow it, at the meeting of 1798.

75. *Diary of Bentley*, II, 186.

76. [Thomas Pennant], *British Zoology*, Fourth Edition, 4v. (Warrington, 1776-7).

77. *Supplement to the Encyclopaedia, etc.*, 3v. (Philadelphia, [1800]-1803).

78. For Bancroft's life see Wheatland, "Historical Sketch," 279; *H.U.Q.C.*; and Card Catalog, H.U. Archives.

79. Lazaro [Lazzarro] Spallanzani, *Tracts on the Nature of Animals and Vegetables* (Edinburgh, 1799); *Jo. Alberti Fabricii Bibliotheca Graeca* . . . 14v. (Hamburg, ca. 1727-ca. 1752). Each volume appears

were apparently items available locally, for they were to be "added" rather than "got" or "sent for," and they are described by size as well as title. Two new book boxes were added to hold the new volumes.

Also at the annual meeting of 1802, Prince presented a copy of Kirwan's *Estimate of the Temperature of Different Latitudes*.[80] There is nothing in the records nor on the book itself to indicate its source, but the question may nevertheless be raised whether it might have been presented to Prince by Kirwan himself. An old Salem tradition states that Kirwan was offered remuneration for his books by the Philosophical Library and that he generously declined it. The sources of this tradition appear to be two. Bentley mentions it in his diary on 15 May 1814. He ascribes the ownership of the Kirwan library to "a Literary Institution in Quebec," and he mentions not an offer of repayment declined but the lack of "any reproach that we had not made a surrender of the books to their Institution."[81] The other source is more explicit but also not quite contemporary.

> I am happy to have it in my power to add, on the authority of the late venerable Dr. Prince, that the gentleman into whose hands this collection of philosophical and scientific works had thus fallen, of whom he was one, and for many years their librarian, made an offer of remuneration to Dr. Kirwan, who respectfully declined it, expressing his satisfaction that his valuable library had found so useful a destination,

wrote Judge Daniel Appleton White two years after Prince's death.[82] Such an action would certainly be in accordance with Kirwan's open-handedness, and some indication of his attitude towards members of the American Academy of Arts and Sciences may be seen in his sponsorship in 1787 of the Academy's presi-

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to be of a different edition and date, and I did not examine them all; Thomas Taylor, *The Philosophical and Mathematical Commentaries of Proclus, etc.*, 2v. (London, 1792); [Thomas Pennant], *Arctic Zoology*, 3v. (London, 1784-7).

80. Richard Kirwan, *An Estimate of the temperature of Different Latitudes* (London, 1787).

81. *Diary of Bentley*, IV, 255; an earlier entry (I, 151) also gives the books' destination as Canada. Tapley's account (*Salem Imprints*, 248ff.) repeats Bentley's error.

82. White, *Eulogy of Bowditch*, 42-43.

dent, James Bowdoin, to be a Foreign Member of the Royal Society of London.[83]

The Beverly Social Library had begun in 1802, and Dr. Joshua Fisher and Nathan Dane, assisted by the Reverend Joseph McKeen had chosen the books to be sought with the proceeds of 132 $5 shares.[84] Fisher had dropped out of the Philosophical Library in 1795; Dane was a member only from that year to 1800. McKeen had joined at the same time as Dane, and in 1803 he, too, dropped out, leaving none but Salem residents as members. McKeen's share was sold to Judge William Prescott, and a special meeting was held in September, 1803, to admit him. Only Barnard, Holyoke, Prince, and Treadwell attended. Since Bancroft and Bowditch were out of the country, there was no possibility of getting all the absent members to consent to Prescott. The four members present voted that he might use the books until the two sailors returned, and they recorded the concurrence of Bentley, Cutler, and Read. A later entry signifies that Bancroft's and Bowditch's consent had been finally obtained.

Judge William Prescott (1762-1844) was the son of Col. William Prescott of Revolutionary War fame and the father of the even more famous William Hickling Prescott, historian. The Judge was a great benefactor of Harvard, which he served as Overseer from 1810 to 1821 and as Fellow from 1820 to 1826. Harvard awarded him the LL.D. in 1815; Dartmouth, in 1826. Although he was a Fellow of the American Academy of Arts and Sciences, Judge Prescott's only scientific paper is an unpublished undergraduate mathematical thesis entitled "Projection of a Lunar Eclipse."[85]

No books had been added to the library during 1803. In 1804 only Rembrandt Peale's pamphlet on the mammoth was acquired. It is now bound together with Kirwan's *Temperature of Different Latitudes* and the *Relation of the River Nile, by an Eyewitness.*[86]

83. Raymond P. Stearns, "Colonial Fellows of the Royal Society of London, 1661-1788," *William and Mary Quarterly,* Third Series, III, 267 (April, 1946). Kirwan's is the second of eight names on the proposal.

84. Stone, *History of Beverly,* 120-121. Fisher and Dane were joined by Thomas Davis.

85. For Prescott's life see Wheatland, "Historical Sketch," 279-80; *H.U.Q.C.;* Card Catalog, H.U. Archives.

86. Rembrandt Peale, *An Historical Disquisition on the Mammoth . . .* (London, 1803); [Wyche, Peter], *A Short Relation of the River Nile, etc.* (London, 1798).

Since there is no record of the latter's acquisition, the binding may have been done after 1810. No books were added in 1805 or 1806. In 1807 a set of the *Philosophical Magazine* was ordered with the proceeds of the sale of two shares. The two new members were Dr. Benjamin Lynde Oliver and Ichabod Tucker. They were the first new members to buy shares direct from the Library since Bowditch had joined in 1797, and their joining completed the membership of the Salem Philosophical Library.

Dr. Benjamin Lynde Oliver (1760-1835) was the grandson of Judge Benjamin Lynde, who presided at the Boston Massacre trial, and the son of Judge Andrew Oliver, the author of a work on comets (see above). The younger Oliver studied medicine with Holyoke from 1778 to 1781. Soon thereafter he moved to Virginia, where he practiced medicine for six years before returning to Salem. In 1800 he became a member of the Massachusetts Medical Society, and he was awarded the honorary degree of A.M. (1808) and M.D. (1815) by Harvard College. His only known publication is *Letters on the Kine Pox, etc.* (Philadelphia, 1802), a pamphlet jointly authored with William Currie. He was a trustee of the Salem Athenaeum from 1810 to 1826.[87]

The Salem Philosophical Library held only two more annual meetings. In 1808 no books were requested, and in 1809 Parkinson's *Organic Remains of a Former World*[88] was the only book to be sent for. Though new titles were being added very slowly, the cost of adding annual volumes of serials kept assessments high, between £4/10/0 and £7 after 1805. Before the members of the Philosophical Library were to gather for their annual meeting of 1810, they agreed to join with the Social Library to form a new organization, the Salem Athenaeum.

Boston in 1805 saw the formation of the Anthology Society, a group formed to continue publication of the *Monthly Anthology*, a periodical founded privately in 1803. In 1807 the group

87. For Oliver's life see Wheatland, "Historical Sketch", 280; *H.U.Q.C.;* Card Catalog, H.U. Archives; *A Catalogue of the Library of the Salem Athenaeum . . .* (Boston, 1858), xiii. For Tucker's life see Wheatland, "Historical Sketch," 280-1; *H.U.Q.C.;* Card Catalog, H.U. Archives; *Catalogue of the Salem Athenaeum,* xii-xiii.

88. James Parkinson, *Organic Remains of a Former World: an examination of the . . . remains . . . generally termed extraneous fossils,* 3v. (London, 1804-11). This work did not arrive before the Philosophical Library lost its identity and it is therefore not listed in the Librarian's Book.

opened at the instigation of William Smith Shaw a reading room and library which became the Boston Athenaeum soon after.[89] Nathaniel Bowditch had published an article in the *Monthly Anthology* for December, 1807, and was to publish others in 1810, and 1811, so he was probably intimately acquainted with the Boston Athenaeum and its supporters.

In March, 1810, Bentley was visited by Bowditch and Dr. Moses Little to discuss the proposed merger.[90] The Athenaeum was incorporated in March by Little and others, including Holyoke, Treadwell, and Oliver from the Philosophical Library. Shares were sold for $50, and a share in either the Philosophical or Social Libraries was transferable to the Athenaeum.[91] The Philosophical Library closed its books on 5 June 1810. Barnard, Bentley, Bowditch, Holyoke, Oliver, Treadwell, and Tucker signed away their own shares. Bancroft had died, so his share was signed away by Samuel Putnam as the administrator of his estate. Putnam also signed for Prescott as his attorney. Read, moved to Maine, and Cutler were represented by assignees: John Prince, jr., and John Pickering the philologist, respectively.

The agreement to dissolve the Philosophical Library had not been achieved without misgivings. Bentley had not approved of the proposal when it was first presented to him:

> I . . . did not discover a wish to make the proprietors of the Philosophical Library ample compensation. There was too much of the Merchant to be seen in this Literary enterprise. They [Bowditch and Little] confessed the sum proposed was not up to the true value of the Books.[92]

Apparently his fellow clergymen were also unhappy, for on 21 April Prince got Bentley to sign an agreement with the Athenaeum trustees which Barnard and he had already signed. It provided that the three clergymen were to have life membership in the Athenaeum free of any assessments.[93]

89. For the history of the Boston Athenaeum I have drawn on the account in Thompson, *American Public Library*, 66-9.

90. *Diary of Bentley*, III, 502.

91. Tapley, *Salem Imprints*, 264. Charles S. Osgood and H. M. Batchelder, *Historical Sketch of Salem* 1626-1879 (Salem, 1879), 110-111.

92. *Diary of Bentley*, III, 502.

93. *Diary of Bentley*, III, 511. This paper is loose in the front of the Record Book.

On 18 June Holyoke, Treadwell, and Pickering as trustees of the Athenaeum gave Prince a receipt for the books,[94] and on 11 July the Athenaeum opened in hired rooms. It is still open, but few scientific books and no scientific serials have been bought since the turn of the twentieth century. The collection which once belonged to the Philosophical Library lies unnoticed on the shelves together with the splendid scientific collection from the Social Library and the books added in the ninteenth century.

The Salem Philosophical Library appears to have been the only significant private collection of books primarily scientific which was formed in the United States during the late eighteenth century. Though the collection began with the happy accident of war which brought the Kirwan library to Beverly, Kirwan's books made up less than one-third of the total number in the Library when it was dissolved. The members of the Philosophical Library, keenly interested in the developments of science and alert to the best and latest of scientific publications, made sacrifices to build around the nucleus of Kirwan's serials a collection embodying the newest and most significant developments in science.

Yet the members of the Salem Philosophical Library were few in number, and the books did not suffer heavy use. Prince, Holyoke, and Cutler among the founders and Bowditch and Read among the later members probably found the collection indispensable to their activities, and the publications of McKeen, Orne, and Fisher probably benefited from their author's reading in Philosophical Library books. The rest kept themselves *au courant* by their borrowings. Though by the standards of the time the scientific productivity of the Library's members was meager, it would be a mistake to judge its effectiveness by this criterion alone. That these busy men managed to publish anything at all is perhaps a tribute to the stimulus of such a magnificient collection of scientific books.

What the Library needed was a broad basis of membership to subsidize the maintenance of a complete scientific collection for those who had the need and desire for one. Such a broadened membership was never realized. Blaney and Page—the first two persons of little scientific interest to join the library—died very soon after they became members. No one else put much money

94. This paper is loose in the back of the Record Book.

into the Library until Bowditch joined, and the cost of keeping up the collections must have borne hard on the members. The example of the Boston Athenaeum set a pattern which Salem could repeat, though with a difference. By merging the Social and Philosophical Libraries, the large membership of the one might subsidize the collections of the other for the few who could profit from them. This was undoubtedly in the minds of Bowditch and the other founders of the Athenaeum.

Unfortunately for the Salem Athenaeum, the slow economic decline of Salem (following the Embargo Act of 1807) was matched by an intellectual decline as Cambridge and Boston lured away the best minds, and those who remained came to live more and more in the past. So, though the capture of Kirwan's library served for a generation as a powerful stimulus to the small but exceptional group who made up the Philosophical Library's membership, a broader view of the Library's history leads us to share the judgment attributed to Kirwan himself, that it was an occasion for rejoicing just to find that the books had been put to any use at all. They might have been burned with the rest of *Duke of Gloucester's* cargo but for the efforts of Captain Robinson, or used for scrap by Dr. Stearns, but for the efforts of Willard and his friends. And had it not been for Nathaniel Bowditch's illustrious mathematical career, the Salem Philosophical Library would hardly be heard of today.

For Bowditch's career is the most solid achievement to the Library's credit. Without its collections at his disposal, he would certainly have failed to gain an international reputation, and he might have ended up another Salem merchant or sea captain. Bowditch himself recognized his debt in his legacy to the Athenaeum, to which his children later contributed as well. But in his will Bowditch made an exaggerated statement of the Library's uniqueness which has distorted our historical picture. The Salem Philosophical Library was far from being "a better collection of Philosophical and Scientific books than could be found in any other part of the United States nearer than Philadelphia."[95] An examination of Harvard's catalog of 1790 shows that, except for the *Miscellanea Berolinensia* and the works of Bernoullis, Harvard College Library contained everything in the Salem Philosophical Library and a great deal more. Thus, though Bowditch's early

access to the latter made his career possible (for the Harvard Library was closed to him until later), his statement about the Philosophical Library gives us a false idea of the interest in science in eighteenth and early nineteenth century New England. For science was by no means neglected during this period anywhere in the United States, and certainly not in its colleges. Indeed, the existence of the Salem Philosophical Library is itself proof of the value which early Americans placed on the fruits of scientific research.

95. This section of Bowditch's will has been quoted extensively. I have used Ralph D. Paine, *The Ships and Sailors of Old Salem*, Revised Edition (Boston, 1927), 270-271.

A NINETEENTH-CENTURY BEVERLY PARTNERSHIP

The Pickett Coal Company, 1827-1910, II

By Robert W. Lovett

One of the leading Beverly firms engaged in the wood and coal trade, as well as in the ownership and outfitting of fishing vessels, throughout the nineteenth century, was that with which Richard and John Pickett were associated. From the surviving records (mainly ledgers), much may be learned of the nature of the wood trade, its gradual supplanting by coal, and of certain local vessels which took part in both the carrying of fuel and in fishing.[1] Richard Pickett and Abraham Edwards had owned vessels together from 1815, and had been in the wood and teaming business together for a number of years prior to 1827; but it was not until the latter year that their full-fledged partnership in wharf and stores began, with the acquisition of the eastern half of the Bartlett-Haskell store and wharf on Water Street.[2] This property was at the end of Water Street farthest from the Essex Bridge (built in 1788), and at the junction of Bartlett and Water Streets. Within four years, they had acquired the other half of this property, as well as a portion of Whittredge Wharf (adjoining to the west) and of a fishyard along what is now Lothrop Street.[3] But the mainstay of the business, particularly in the early years, was cord wood for fuel.[4]

By 1827 much of the cord wood and lumber, to serve a population of about four thousand, was being brought to Beverly by schooner from Maine. It was known as eastern wood (that from the interior was sometimes known as country wood), and is to be distinguished from local wood and, later, from Nova Scotia wood. The *Essex Memorial* for 1836 states that "It is estimated that

1. The main source consists of the ledgers and a few papers in the author's possession; they were received from his grandfather, Horace W. Woodberry, the last owner of the business. The author's previous article, in Essex Institute *Historical Collections*, XCL (April 1960), 85-104, considered the growth of the firm and changes in ownership throughout its life.

2. Edwin M. Stone, *History of Beverly* (Boston, 1843) counts twelve wharves along Water Street, valued, with the sixteen stores thereon, at $30,000 to $40,000. (p. 201).

3. Details of property transactions may be found in my previous article.

4. A cord of wood, cut for fuel, measures 8′ x 4′ x 4′, or 128 cubic feet.

three thousand cords of eastern wood are consumed in Beverly every year; the quantity, however, is diminishing as coal becomes more generally used."[5] Stone, writing in 1843, could still report that "the annual importation and sale of eastern wood amounts to about 3000 cords;" and he added, "coal, 250 tons, and lumber 700,000 feet, forming an aggregate value of $27,500."[6] Stone's figure of 250 tons of coal used does not quite imply the "general use" suggested by the *Essex Memorial;* it was not until 1850 that the valuation of coal held by the Pickett firm surpassed that for wood.

The first ledger contains a page devoted to "an account of wood bought by sundry persons," showing that, from March through December, 1827, 777 cords were bought at a cost of $3,251, or about $4.18 a cord. Some of this came on the schooner *Mechanic, Jr.,* Captain Jabez R. Blanchard, of Richmond, Maine. The 114-ton vessel was built in Richmond in 1826; the following year Pickett and Edwards were listed as owners of one-half, William and Albert Thorndike of the other half.[7] The half-interest cost each set of owners $1,485, and the vessel was carried at a valuation of $1,250 in 1829, the date of the first surviving inventory of the firm's property. The schooner was kept busy; for example, between April and November, 1829, Blanchard made eleven trips, bringing back some 562 cords of wood on the eight trips for which such figures are shown, or an average of seventy cords a trip. As an indication of profits from the vessel, the owners divided $749 in the first accounting, February, 1829; and for the eleven trips in 1829 returns amounted to $715.

The customers for wood included a considerable proportion of the citizens and organizations of Beverly, as well as certain town departments. Such commercial customers as the Salem Lead Factory, Essex Bridge, and the Eastern Railroad appear; most of the local churches are represented; and other town interests are shown by accounts for the South School District, Beverly Poor House, and Union Fire Society. An organization of some importance to

5. Newhall, James R., *The Essex Memorial for* 1836 (Salem, 1836), p. 67.

6. Stone, *op. cit.,* p. 201.

7. A. Frank Hitchings and S. W. Phillips, *Ship Registers—Salem and Beverly,* 1789-1900 (Salem, 1906), p. 120. To be referred to as *Ship Registers.*

dealers in fuel was the Fuel Society, with which the firm was to do business throughout much of the century. This was a charitable organization designed to enable the needy to obtain fuel; it may also at times have had a cooperative basis.[8] Sometimes small amounts of wood were bought, such as fractions of cords, or even a few feet. Often, considerable time would elapse between purchases (indicating that the customers may have been spreading their purchases among several dealers), and settlement would be even longer delayed. Some customers carted the wood themselves, thereby saving charges of from twenty-five to fifty cents a cord, doubtless depending upon the distance.

The writer has noted prices of cords of wood, near the first and middle of each month, from March, 1827. The quality of the wood affected the price, and one notes, even in the early years, such words as "bark," "green," "cleft," and the like. At the top would be the hardwood or "country hard," with the price declining through such categories as dry pine, green pine, spruce, and hemlock, to bark, slabs, and refuse. For the period, 1827 to 1830, the price per cord for the good hardwood is under six dollars, and occasionally under five. Beginning in 1831, most of the prices per cord are over six dollars, and for 1832 even over seven. They fall back to the sixes in 1834 and 1835, increase to seven and over in 1836, with even a few cords priced at over eight dollars. In 1837 prices drop to between seven and eight dollars a cord, in 1838 to between six and seven dollars, and there they remain through much of the period to June, 1843. Prices then fall below six dollars a cord, where they stay for most of the term of the original partnership, or to 1845. An indication of the firm's profit is shown by a comparison of sales prices with the valuations as carried in the January accountings. For instance, wood was valued at $4.75 a cord in January, 1829, and was selling for $5.50; in 1843 it was valued at $5 a cord and was selling at $6.50, but by June it had gone down to $5.50. For the first twenty years of the firm (roughly, the period of the first partnership), values of wood on hand at year-end fluctuated, from a low of $150 (25 cords at $6) in 1834 to a high of $984 (164 cords at $6) in 1838.

8. According to a record of 1859 in the Beverly Historical Society, dues were one dollar a year.

The first appearance of coal in an area is of interest, and the event was noticed in later histories of Beverly. Frederick Ober, writing some fifty years later about events of the year 1830-1831, states:

> The introduction of coal into this town began about this time. In October, 1831, Messrs. Pickett & Edwards carted two thousand seven hundred and ninety pounds of coal to the hay scales near the Old South, to be weighed, and then to the house of Jonathan Batchelder; and also other small lots to a few other individuals. October, 1834, forty-seven tons were landed here from a vessel, of which Capt. Stephen Woodbury was master. This last was sold to forty-three different persons in the space of eleven and one-half months. It came in large blocks, and had to be broken up with the top-maul or axe, to prepare it for the stove. Many weary, fretful hours (says Mr. Pickett), were spent in trying to make the "strange stuff" burn.[9]

Of the 1831 sale (which the Beverly *Citizen* for 1892 calls 1830)[10] the writer has not been able to find a record. The earliest reference in the ledgers to coal found so far (though there may well be earlier), is for February 10, 1832, when John Wilson bought 200 lbs of coal for 75¢.[11] At this rate a ton would cost $7.50; the same day, he bought a cord of wood for $7.00. There is verification of the larger sale, for in October, 1834, Benjamin Hawkes, of Salem, supplied forty-seven tons of coal. Pickett & Edwards sold it on commission; the total sale through October, 1835, amounted to $343.83½, on which their commission, at 5%, came to $17.19. Prices started out at $6.75 a ton, later increased to $7.50, with an average of $7.30. Among the purchasers were Doctors Ingals Kittredge and W. C. Boyden, Elliott Woodberry, Robert Haskell, Foster & Lovett, chandlers, and Abraham Edwards himself. All was eventually disposed of, even to an entry, "by coal dust sold."[12] Values for coal on hand are not shown on

9. D. Hamilton Hurd, *History of Essex County, Mass.* (Philadelphia, 1888), Chap. XLVIII, Beverly, by Frederick A. Ober, p. 767. The author could have talked with John Pickett, who died in 1887. To be referred to as Ober.

10. Beverly *Citizen*, Souvenir Issue, March 5, 1892.

11. Ledger C, p. 9.

12. Ledger D, p. 168. Hawkes was one of the earliest dealers in anthracite coal in Salem. See Essex Institute *Historical Collections*, XXXI (April, 1895), 112.

the annual balance sheets for the first partnership, and not many prices have been noted. The type of coal is also not shown, but it is likely that most of it was anthracite, although bituminous coal was being brought into Boston at this time from Richmond, Virginia, and from Nova Scotia.[13]

In January, 1844, Abraham Edwards decided to retire from business, and John Pickett, who was Richard's nephew, purchased his share in the partnership. John, who was then thirty-seven years old, had been carrying on the sail loft and owning shares in vessels for and with his uncle for some time. The partnership was to last until Richard Pickett's death in 1864; extending thus until almost the end of the Civil War, it makes another convenient segment for our consideration. Expansion of the business, especially in coal, led the firm to acquire a second wharf, near the junction of Cabot, Water, and Front Streets, in 1853. A scale for weighing coal was acquired in 1851, and a second one in 1857. Unloading the coal schooners was still done by hand, probably at the rate of five or six tons per laborer per day. At this rate, it would have taken the four or five laborers employed at that period eight days to unload a small schooner.[14]

The records are still not very detailed as to sources of goods, especially coal. However, from 1847 there are frequently notes in the front of the ledgers as to wood received and, from 1857, similar notes for coal. There is even a stray note for coal in the 1851 ledger, indicating that the schooner *Pearl* brought in 238 tons and the *Mercy Taylor* 201 tons. But the following year the firm acquired considerable coal from Phillips, Goodhue and Baker, of Salem, sending three employees and teams on several trips for it. Annual receipts of wood were between 750 and 900 cords during much of this period. In 1857, 2,245 tons of coal were brought in by ten schooners, including the *Pearl* and the *Mercy Taylor*. That same year, three vessels, the *Mary Ann, Excelsior,* and *Scepter,* brought in 702 cords of wood. The next year some designation of types of coal is to be found; stove, egg, Swatera stove, white ash, and Franklin stove were received.[15] These were

13. Robert G. Albion, *The Rise of New York Port,* 1815-1860 (New York, 1939), p. 133.

14. William J. Nichols, *The Story of American Coals* (Philadelphia, 1897).

15. *Ibid.* Egg, stove, and nut, or chestnut, were names for coal sizes.

types of anthracite coal, which was becoming more popular for domestic use, and probably came from Pennsylvania. In 1860 the *W. G. Bartlett* made three trips for coal, and the same year the *Mary Ann* made nine trips for wood.

The price of a ton of coal during this period approximated, and at times was somewhat lower, than that of a cord of hardwood. The latter brought $5.75 in 1844, advanced to $7 and even $8 in 1847 and 1848 (when coal was bringing $6.75 to $7.50 per ton), and dropped to $5.50 in the summer of 1849, when coal fell back only to $6.50. Then prices began to go up again, wood bringing over $6 a cord for much of 1850, 1851, and 1852, reaching $7 in 1853, and $8 and $9 in 1854 and 1855; in the last two years coal cost similar amounts per ton. The price of a cord of wood declined to $7 in 1856, advanced to $8 in 1857, and went back to $6 in 1858; coal was bringing $5.50 a ton in 1859. Wood per cord was over $7 but under $8 in 1860 and in the $6 range in 1862. Then the effect of the War became noticeable, as the price of the best wood advanced to $9 and finally to $12 a cord; and at the same time coal increased to as much as $15 a ton, depending on the grade. By the 1860's some evidence may be found of the sale of coal to wealthy estate owners at Beverly Farms and to factories being constructed on Rantoul and Park Streets, near the railroad. These, especially the latter, were to be good customers for bituminous or soft coal, bringing about some changes in where the firm acquired the coal and how it handled it.

Upon Richard Pickett's death in 1864, John Pickett became sole owner of the business. But in 1877 he brought in as partners his nephew, Horace Woodberry, who had been working for him since 1865, and Jesse Trask, who married his foster child, Susan Bailey. John Pickett died in 1887, and the years between the end of the Civil War and that date form another convenient period for consideration, during which coal became the main business of the firm. Wood for fuel continued to be brought in, but in dwindling quantities; much of it came from Nova Scotia. For example, in 1869 the schooner *Lodi,* in which the Picketts had had an interest, discharged 41 5/8 cords of Eastern wood, and the *Adah, Adelia, F. P. Ladd,* and *Antelope,* brought in together from Nova Scotia 316 7/8 cords, the *Adelia* making two trips. On the other hand, some wood was being brought from Maine by railroad, as

the entry, "deld. to Beverly depot from Gilead, Me.," indicates.[16] Small amounts were cut locally; sometimes the coal dealers owned wood lots, and the employees cut wood during the summer. Pine was from two to four dollars a cord cheaper than the best hardwood. Extra charges were made for sawing, and references to "1 cut," "2 cut," or "3 cut," and to "sawed and split" became more frequent. A cord of hardwood brought $12 in 1866 and 1867; then stabilized at $11 until 1875; next dropped to $10 (1876), $9 (1877), $8 (1878-1880); and then increased to $9 (1881), where it remained, with some variation, until 1887, the end of this partnership. But a cord of hardwood, "sawed and split," brought $13 in January, 1886, while a cord not so treated was selling for $9 at about the same time.

As the demand for coal increased, especially for bituminous coal for the shoe factories, the Pickett firm extended its facilities for handling it. In 1875 the new wharf (just twenty years old) was enlarged by filling in and extending piers. Ten years later the two old or lower wharves were joined together, making a larger area for storage of coal for industrial use; however, the names Haskell and Whittredge continued to be used on occasion.[17] From figures compiled for tax purposes, it appears that the coal sheds on the north side of Water Street were valued at about $700, and on the wharf at about $1,600 during the years 1876 to 1886. A steam engine first appears in the inventory in 1874; a new engine was acquired in 1885, and in 1886 a boiler. These properties, together with the chute pictured in the 1886 view of Beverly,[18] indicate mechanization (at least in part) of the unloading of coal. But methods of delivery were still the same, and the inventory records at various times a large wagon and sled, wheelbarrows and tubs, and a pung.

As we have seen, figures for amounts of coal landed are available from 1857; in the 1865-1887 period there is a gradual increase in tons (with a few reductions) from 2,675 tons (1865) to 9,756 tons (1886). Much of this coal came by schooner from

16. John Pickett, ledger 6, p. 27.

17. Ober, *op. cit.*, states: "The Whittredge wharf and the old sail loft have been consolidated into one, and large buildings erected there, for the storage of Cumberland coal, the demand for which, for steam purposes, constantly increases."

18. A copy hangs in the Beverly Historical Society.

Philadelphia or from such New Jersey coal ports as Elizabethport, Hoboken, Weehauken, and Perth Amboy. A few vessels in which the firm had an interest made the trip, such as the *Ocean Traveller,* which began the Philadelphia run in 1865, and made as many as five trips in 1870. The schooner *Pearl,* the *Saratoga,* the *Lodi,* and the *John Ponder, Jr.* were other vessels, in which the firm had interests, used at times to bring in coal. The firm of course made use of schooners owned by others, and it is likely some were owned by the coal companies. When the large suppliers, such as the Philadelphia & Reading and the Wilkesbarre, set up coal pockets in Salem, coal was brought to Beverly from there. But the Pickett firm did not give up receipt of coal by water; for instance, of 4,606 tons received in 1878, only 361 tons came from various sources in Salem.

An interesting source of semi-bituminous coal during much of this period was Nova Scotia, both Pictou and Cape Breton. For example, in 1872 a cargo of black diamond culm coal was brought in on the brig *Ellen F.* from Pictou. The same vessel brought in another cargo in 1873, and in 1875 Pictou coal was received by the schooner *Mary Jane,* the *Candor,* and a small amount from R. C. Manning, Salem. Since the distance was greater, freight charges on coal from Pictou were more than on that from Philadelphia; for example, in 1873 freight from the former place was $3.25 a ton; from the latter, about $2.60. However, Pictou coal could still be sold more cheaply than corresponding coal from Maryland or Pennsylvania; thus in 1883 2600 pounds of Pictou coal sold for $5.20 and 2550 pounds of Cumberland coal, probably from Maryland, for $7.00. There is some confusion about Cumberland coal, since coal from Sydney, Cape Breton, was also known by that name. I believe that most of that called Cumberland in the ledgers came from Maryland; there are only two references to Cape Breton coal, in 1882 and 1883. From 1872 to 1887 Pictou coal seems to have been received in every year except 1878, and it is noted in the inventory in 1894 and 1895. The largest amount in any one year was 445 tons, whereas receipts of Cumberland coal (which began in 1877) increased rapidly after 1885, reaching 1611 tons in 1887.

Figures were also kept for "coal delivered by John Pickett," and these are sometimes a little more, sometimes a little less, than coal

received. The discrepancy was evidently caused by the fact that Pickett at times had to acquire coal locally to meet demands and at times was able to furnish coal to other dealers. From 1876 to 1887 yearly figures for "coal delivered by John Pickett" are broken down into types, such as so many tons of stove, egg, furnace, chestnut, Pictou, and Cumberland. For the years 1878 to 1885 large sales are also summarized, by name of firms and number of tons. Thus for 1884-1885 Joseph H. Baker took 839 tons, or almost 70 tons a month; A. Perry & Co. took 661 tons, K. Lefavour & Sons, 674, Seth Norwood & Co., 736, and Woodbury Brothers, 1,179. Earlier, the School Department took 109 tons of furnace coal, the Hose Company, 13 tons, and the churches 38 tons; the Salem jail purchased 55 tons of egg and 60 tons of stove, and the Court House 100 tons of soft coal.

Prices varied according to the type of coal; by 1866 most types were stabilized at $10 a ton. In 1867 the price fell to $9 a ton; in 1868, to $8.25; thereafter, variations were greater, ranging from $8.50 to $10.50 and more. During most of this time, a ton of coal was from $2 to $3 cheaper than a cord of hardwood. Detailed prices for each type of coal are given from 1877; these prices are "delivered and put on," and the phrase, "tipt up," appears occasionally. Franklin coal sold for $7.50 a ton on April 9, 1877, $7 on April 30, $6.50 on June 20, and $6.50 on September 7. There is a note that "for 80 days from June 20th to September 7th we sold coal cheaper than it has ever been sold ever since coal was introduced into Beverly." The owners further note that "from Sep. 7, 1877 to Nov. 11, 1878, we sold coal at one price." There followed a gradual increase to the end of 1882, when a ton of Franklin sold at $8.25. Prices then gradually decreased until, at the lowest point (June 14, 1886), a ton of Franklin sold at $6.00. Prices at the end of the period under review were going up slightly.

Along with wood and coal, the Pickett firm dealt in lime, sand, and cement, not an unusual combination. Following the Civil War, larger quantities of these were also carried; separate entries appear for them in the annual inventories from 1866. Much of the lime came by water from Rockland, Maine; it was valued at over a dollar a cask in the early 1870's, declining to 80¢ in the later years of the decade. Sand was valued at under a dollar a ton;

for many years it was carried at 90¢. Later, the firm had the franchise for Atlas cement, and it also dealt in hair.

Upon John Pickett's death in 1887, Woodberry and Trask continued as partners until 1895, when the latter sold out to the former. The business was known as the Pickett Coal Company, and it continued under this name until its final disposition in 1910. Coal now represented the chief business of the firm, and the sale of wood was in most instances, just a few feet for kindling. An advertisement in the Beverly *Citizen* for December 10, 1887, states: "Coal—Lackawanna, Wilkesbarre, Johns Lorberry, Shamokin, Philadephia, Lehigh and Franklin. Pictou and Cumberland for factory use. Orders by post card attended to. Offices Water St. and cor. Cabot and Milton. Order box H. P. Woodbury's at Cove." The entries show discounting for cash, generally twenty-five cents a ton. Wharf prices were 75¢ off delivered prices; and a 2% discount was offered for large purchases. Customers who benefitted were mainly the local factories and greenhouses, who purchased large amounts of Cumberland coal and screenings, with charges being totaled at intervals. At times during Woodberry's ownership of the firm he seems to have been handling all coal accounts for city departments, including those of his competitors, Sprague, Breed & Brown, and John Girdler.[19] Prices available for November 11, 1895, show one ton of stove coal at $5.25 to $5.75, ½ ton at $2.75 to $3; ¼ ton at $1.44 to $1.50. Over the next few years, prices gradually rose, to $6 (1896 and 1897) and $7, by 1902, the year of the anthracite coal strike.

Sources of coal are indicated by receipts in 1889 by schooners from Philadelphia, Perth Amboy, and Glace Bay, Cape Breton, and (a small amount) by train from J. Albert Walker & Co., Boston. Barges were beginning to be used for shipment of coal, requiring employment of tugs to bring them into the harbor; and in 1893 the firm acquired its own steam tugboat, the *Henry Preston*. There is a note of coal landed during 1899, indicating that 4,993 tons were brought in on the *D. A. Wilson, Maud,* and other schooners from March to September.[20] Freight charges from Phil-

19. Pickett Coal (Woodberry), ledger 3, p. 748. Sprague, Breed & Brown acquired the adjoining wharf (towards the bridge) from Fairfield about 1902. Girdler had the wharf nearest the bridge, and also one next to the Pickett lower wharf.

20. Pickett Coal (Woodberry), ledger 3, p. 748.

adelphia ranged from 45¢ to 82¢ per ton, depending on the kind of coal. Labor was bringing $2 a day in 1889, but "wheeling," a more arduous job, brought $4. Mechanization in the handling of coal consisted mainly in the use of a donkey engine to hoist buckets (about ½-ton) from the holds of the barges to the top of the storage buildings. But men were still needed to fill the buckets in the hold, to dump them into carts above, and to tip the carts into the appropriate pockets. Trucks were not acquired by Woodberry, and it appears that he did not make use of a permit issued by the city in 1903 authorizing him to construct track from his wharf to track along Water Street laid by the Guffey Petroleum Company.[21]

An event which seriously affected coal dealers and their customers was the anthracite miners' strike of 1902. It appears from the ledgers that Woodberry received no coal from July to December of that year. The entries for the Fuel Society show charges for wood alone for the last two months of 1902 and for much of 1903. Woodberry sent to Nova Scotia for wood to meet the need, and he also allotted cheaper grades of coal in small amounts. Prices of coal per ton went up from $7 to $12, then back to $7. In September the Beverly *Citizen* stated that coal dealers raised the price of anthracite to $14 a ton and limited amounts to one-half ton or less to a customer. By December persons were paying as much as $18 a ton; and on Christmas Day all the delivery teams were busy filling orders.[22] But the Pickett Coal Company never really recovered the position it had held earlier. Woodberry was not prepared to specialize in soft coal, which the large plants were demanding, and the contract to supply the United Shoe Machinery Company went to Sprague, Breed & Brown. In the future, coal was to be brought in by steamers; the first came to Beverly in 1910. Woodberry's sixtieth birthday fell in 1909, and the following year he began negotiations for the sale of the business to Sprague, Breed & Brown. The sale was not final until 1911, but the Pickett Coal Company really ended in September, 1910. Sprague, Breed & Brown, in turn, became a part of the

21. Notice, signed by City Clerk, November 10, 1903.

22. Beverly *Citizen*, September 27, December 20, December 27, 1902. By December the *Citizen* was saying that there was enough coal in the country, but a lack of transportation. Family tradition says that Woodberry also acquired a pony for the children in Nova Scotia at this time.

New England Coal and Coke Company in 1917. The good-will and assets of the last of the old-time Beverly coal companies (the John Girdler Company) were taken over eventually by the Pickering Coal Company, of Salem. No coal business is carried out on the wharves along Water Street, Beverly, now. But for eighty-three years the Pickett Coal Company (under its various names) contributed much towards making these wharves a busy place and towards supplying Beverly's homes and factories with fuel for heat and power.

Another activity in which the Pickett firm took part during a good part of its existence was ownership of vessels (or shares in vessels) engaged in fishing. According to Ober, the Beverly cod fishing business was at its best between 1840 and 1850,[23] and Morison reports sixty-four fishing vessels out of Beverly in 1840.[24] The average vessel at this period measured eighty to ninety tons burthen, carried six to nine men, and made two, or sometimes three, trips to the Grand Banks each year. The average cost of a new schooner was $4,000, and the annual gross returns, based on 200 quintals of fish, might be a thousand dollars. The general practice was for each man to receive one-half of his catch, and the skipper a bonus of six to eight percent on the gross amount. The "great general," or the essential chandlery items, was furnished by the owners; the cost of the "small general," comprising firewood, beans, potatoes, and meal, was divided among the crew. After deducting the great general, the owners took one-quarter to three-eighths of the return, and divided the rest among the crew in proportion to the amount each man caught. The fish were salted in the hold, unloaded in port, and spread on the fish flakes (along what is now Lothrop Street) for curing. Most of the fish was sold at wholesale to firms in Salem and Boston. Pickett & Edwards also engaged in occasional special ventures, in such goods as flour, molasses, and coffee; sometimes they took such items on consignment.

The ledgers for the Pickett and Edwards partnership (1827-1844) contain complete accounts for the various vessels, showing their outfitting, the crew's accounts, and returns on the sale

23. Ober, *op. cit.*, p. 746.

24. Samuel E. Morison, *The Maritime History of Massachusetts, 1783-1860* (Boston, 1921), pp. 297-298. A quintal was a hundred pounds.

of the cargo.[25] We can visualize the activities incident to loading and discharging the vessels from a few early entries for the schooner *Paragon*. The outfitting was done by Pickett & Edwards as part of their business; the owner's accounts (Richard Pickett was one) were kept in separate books. In March, 1827, there were charges for "carting boards and spar;" in April, for bread, rum, wood, wharfage, water, and the like. By November, she had returned, and the charges then were for "carting fish fall fare." From November to February the vessel was in winter berth, then began the cycle of preparing for sea again. Final settlement for the costs for 1827 did not take place until June, 1828.

The *Mechanic, Jr.,* already described as carrying wood from Maine, also engaged in the fish trade. For instance, in 1834 it sailed on April 24, returning September 23, with 130 hogsheads of Curasol salt and 975 quintals of Banks fish. Another *Mechanic,* owned with Josiah Foster, is carried in the annual inventory only for 1830 at a value of $1,100. And a third *Mechanic,* owned with Pyam Lovett, was a total loss in 1832; Lovett lost $687 and Pickett and Edwards each $309. The schooner *John Ruggles,* owned with Captain Elliott Woodberry and Samuel Smith from 1831, was dropped from the inventory in 1843, at a valuation of $500. The firm acquired interests in no less than five vessels in 1834, a banner year. The *Industry,* in which Captain Pyam Lovett and Joanna Gardner had shares, appears only briefly in the records. But the *Seventh Son,* of which Pickett & Edwards owned three-fourths, Captain Vinal Mayhew, one-fourth, had a much longer life. It was one of the vessels (with *Mechanic, Jr.*) carried over into the new partnership. Costs of the schooner *Hannah & Jane,* owned with Captain Simon Dodge, were as follows: mast, board, rigging, $354; hull and body, $500; P. & E., rigging, $554. The Schooner *Emblem,* a less valuable property, registered a loss of $205 in 1835; this was the last year it appeared on the books. The *Sophronia,* the last of the schooners acquired in 1834, was also valued at a low figure. Owned one-third by Samuel Pickett, it dropped from the record in 1836 at a value of $400. And that year the firm acquired a completely new schooner, the *Exchange,* valued, when completed, in 1837, at $3,200. It was

25. Information about the vessels is taken from the ledgers, from the *Ship Registers* (*op. cit.*), and from a series of articles by Frank C. Damon on Beverly shipping in the Salem *Evening News* in the spring of 1927.

built in Salisbury, of eighty tons burthen; among its masters, until its sale in 1843, were Isaac Prince, Benjamin Prince, and Andrew Larcom.

An interesting example of cooperation (including self-insurance) on the part of the owners of fishing vessels in Beverly at this time was the Association or Covenant of Shoresmen. The series of articles by Damon previously mentioned describes this activity, drawing on original records presented to the Beverly Historical Society by Miss Annie Lovett.[26] The Pickett collection includes a few original documents, for John and Richard were active in its affairs. The earliest papers, dating from 1836, consist of bills for appraisal and similar items. The minutes of the meeting of January 10, 1838, indicate one purpose of the group clearly: "Resolved, that we as Owners of Fishing Vessels in Beverly will let our Vessels the present season for 3/8 part of all the proceeds of the Codfish, Hallibut (except such as is smoked) Oil and Bounty that may accrue to said Vessels as the usage and custom has been in Beverly prior to the year 1837."[27] They further resolved that the salters should receive five dollars for one fare and seven for two, "the same to be charged to the great general and they to find their own Frock & Trowsers." Finally, they resolved "that we as Owners will consider it dishonorable to entice men from engagements by fees or bribes of any sort." At the meeting of March 21 John Pickett was made Secretary and Treasurer; and it was decided that the covenant for that year should take effect March 24, provided that 24 vessels subscribed. There are papers relating to the appraisal of damages to the ships *Waterloo* and *Franklin*. The latter was damaged to the amount of $105 by "shipping a sea in a gale." The Covenant Committee agreed to assess $70 of this against the various ships in the Covenant. The *Lodi* (on which John and Richard Pickett had taken out $500 of insurance that year) was assessed $3.78 towards the *Franklin's* loss. Damon reports that the group broke up after 1846, partly because of the loss of two vessels, the *Caroline* and the *Statesman*.[28]

26. Damon, *op. cit.*, especially Salem *Evening News* of February 25, 1927.

27. Codfishermen received a bonus of $8-$10 a year from the government; Morison, *op. cit.*, pp. 310-311.

28. Damon refers to an earlier (1800) Covenant as being in the Pickett collection; it cannot now (1960) be found.

When John Pickett joined the firm in 1845, several vessels in which he and Richard Pickett had had separate interests first appear in the partnership records. The *Paragon,* for which there is a whole volume of records in the collection, was valued at $800 in 1845. But Edwards and Richard Pickett had each held 5/16 from 1828; John Pickett acquired 4/16 in 1832. Richard was paid $25 a year for keeping its books from 1837 to 1843. It was probably the vessel of that name, built in Newburyport in 1816, and sold to Gloucester owners in 1847.[29] Both Picketts had been interested in the schooner *Lodi* (95 tons, Salisbury, 1836-1837); in 1845 R. & J. Pickett owned one-quarter, valued at $2,100. It was sold to David Crowell, occupant of another of the Water Street wharves, in 1866 for $250, and continued in use (bringing in wood in 1869) until 1872, when it was lost at Folly Cove, Nova Scotia, bound from Labrador for Beverly. The schooner *Enterprise,* valued at $600, was owned in conjunction with Charles and Austin Kilham; it was carried on the books only through 1846. The *Beverly,* valued at $1,000, had been in the fish trade for the Picketts and others since 1834. In that year it returned from the Banks with 950 quintals of fish and 100 hogsheads of curasol salt. John Prince served as Captain during much of this time. R. and J. Pickett owned two-thirds in 1845, and the vessel was carried on the books only through 1848. It was probably the vessel of that name, built in Salisbury in 1834 and sold to a Marblehead owner in 1848.[30] The brig *Albert,* of which R. & J. Pickett owned only one-eighth, was carried only through 1847, at a valuation of $400. It was possibly the sloop *Albert,* built in Bristol, Maine (111 tons), in 1835.[31]

In 1846 the firm became interested in three additional vessels. In one of these, the schooner *Olive Elizabeth,* they had a two-sevenths interest along with Samuel Endicott, Edward and A. D. Kilham, Albert Thorndike, and Michael Whitney. They held their interest through 1853, when it was valued at $175. In the schooner *Ashland* they had a quarter interest, which was carried through 1854, when it had dropped in value from $851 to $200. The schooner *Republic,* also owned with Endicott, Kilhams, and

29. *Ship Registers, op. cit.,* p. 141. Values are of the firm's shares, unless otherwise indicated.
30. *Ibid.,* p. 22, typed insert.
31. *Ibid.,* p. 5.

Thorndike, was carried through 1852, when the firm's quarter was valued at $400. The schooner *President,* acquired in 1847 in the same proportion and with the same persons, was held through 1854, valued then at $350.

No interests in schooners were acquired in 1848, but in 1849 three more were added. The firm had a quarter interest in the *Alabama* ($1,200), which was held through 1852, when it had dropped to $800. They had a substantial interest (1/3, valued at $3,133) in the *Swan;* it disappeared from the books in 1851, when it was valued at $2,500. A one-third interest in the *Cronometer* (probably the clerk's spelling for *Chronometer*) is listed for 1849 only, at a value of $190. No new ships appear until 1852, when the brig *Franklin* (1/16 interest, at a value of $531) and the *Gem* (1/16, $450) are entered. The former was carried through 1856, the latter through 1854. The *Gem* may have been the brig of that name (161 tons) built in Marshfield in 1830.[32] R. & J. Pickett held a valuable third interest in the bark *Louisa Kilham,* recorded in 1853 at a figure of $7,649. Its earnings in 1853 were $1,425, in 1854, $3,878, in 1855, $1,300, and in 1856, $2,200; it was sold in London in 1862. Their 1/16 interest in the brig *Canina* was valued at $367 in 1853 and at $150 in 1864, when it was sold. A more valuable quarter interest in the schooner *Saratoga* was carried at $1,500 in 1853. Albert Thorndike owned one-eighth in 1865, when the vessel was used for carrying coal. Its last appearance in the books is for the year 1868, when it was valued at $350. The schooner *Ripley,* in which the firm had a one-eighth interest in 1853 (value, $500), was sold to parties in Truro in 1865; John Pickett's interest at that time brought him $250.

An important new vessel, the schooner *Pearl,* was constructed in 1854; a manuscript agreement to build a vessel (though not named), dated May, of that year, probably refers to the *Pearl.* R. & J. Pickett, Albert Thorndike, Captain Elliott Woodberry,

32. *Ibid.,* p. 69. The same source indicates that the brig *Benjamin Franklin* (1838) was altered to a bark in 1852, with R. & J. Pickett among the owners. It may have been the same *Franklin* on which Shoresman paid an allotment for damages in 1838. According to the *Ship Registers,* John Pickett also had an interest in the schooner *Montezuma* (99 tons, Essex, 1856) during the period, 1858-1863; the vessel does not appear in the firm's annual appraisal.

and others agreed with Nathan Andrews of Essex for construction of the hull, "to be delivered in good order at R. & J. Pickett's wharf . . ." The firm's quarter interest was valued at $2,500 in 1856; the ship was sold in February, 1870, for $4,800. It had been used to carry lime and coal, though it could not have been the same *Pearl,* which was mentioned as bringing in coal in 1851. In 1856 the firm acquired 10/32 interest in another new vessel, the bark *Susan Clark.* The vessel, whose total cost was $17,959, was owned jointly with many Kilhams, Endicotts, Clarks, and others. It was sent to New Orleans under Captain Simon Elliott, who received $5,000 for the trip. A note indicates that profits were 22% per year, but then diminished. The ship was lost off Cuba on July 22, 1861; 340 tons of ice in its cargo were also lost. On an investment of $5,500 the firm received back $4,700 in dividends and insurance.[33]

A much smaller matter was the one-eighth interest in the schooner *Angler,* valued at $75 in 1857. The following year another one-eighth interest, in the schooner *Sam Ober,* was valued at $600; it was carried through 1864. A one-sixteenth interest in the schooner *Marietta* was valued at $213 in 1858; this was held by John Pickett only, and he reduced his share to one-thirty-second from 1865 to 1875. The schooner *Magnolia* was a more valuable property; John and Richard Pickett each held 3/8 in 1859 (value together, $3,018), and Captain Samuel Wilson, one quarter. A formal agreement for a fishing voyage of the *Magnolia* is in the collection; dated May 4, 1867, it is signed by Captain Wilson and eleven men, with John Pickett signing as agent. The printed allotment of five-eighths parts to master and men is crossed out and no other figure entered. The vessel was sold to Nickerson, of Harwich, in January, 1873, for $2,500. A 7/16 interest in the schooner *Martha Jane* (value, $2,187) was carried only for 1861 and 1862. Similarly, a one-eighth interest in the bark *George* ($1,625) was carried for 1861 only. The schooner *Express* (1/8, $1,600) was entered in 1864; it was owned in varying percentages by John Pickett until 1868.

Thus the firm of R. & J. Pickett, although it owned no vessels outright, had interests in a great many. The index to the 1861-1865 ledger happens to record the vessels in two lists: Fishing

33. Damon, *op. cit.,* devotes an article to the *Susan Clark.*

Vessels and Coasting and Freighting Vessels. Among the many names listed, the Picketts had shares in six of the fishing vessels (*Angler, Lodi, Magnolia, Marietta, Ripley,* and *Sam Obear*) and in five of the coasters (*Saratoga, Pearl, Martha Jane, Susan Clark,* and *Express*). The same vessel might be used at different times for fishing or for carrying coal or wood; this was the case with the *Lodi*. Ownership was shared with the captains or with a relatively few Beverly citizens. Besides sharing in the earnings, R. & J. Pickett derived business from the outfitting and the unloading of the vessels. The years 1854 to 1856 were the high point in the firm's ownership of interests in vessels; in each of these years the total valuation of these shares was over $20,000.

Fewer new interests in vessels were acquired after the Civil War, but the holdings in those which were taken on were substantial. For instance, John Pickett (who was carrying on the business alone after Richard's death) held 5/16 interest in the schooner *Ocean Traveller* in 1865, valued at $6,375; other owners were Captain Octavius Howe, Kilhams, and Endicotts. The vessel carried coal in the years 1865 to 1873, as we have noted; it disappears from the inventory in 1876, when Pickett's interest was valued at $1,000. A substantial vessel was the *D. A. Wilson,* built at Salisbury in 1869, and to remain with the firm until about 1900. John Pickett owned one-half (value, $4,250) and Captain Samuel Wilson the other. A charter party for a fishing trip to the Banks, dated 1869, is in the collection; the owners were to pay 3/8 and the crew 5/8 of the cost of tackle and similar materials, and the returns were to be divided in the same way. The Beverly *Citizen* for August 10, 1887, states that the *D. A. Wilson* had arrived at Gloucester with 160,000 pounds of cod fish. The increase in size of the schooners is apparent when one compares this with the loads of under 100,000 pounds (100 quintals) brought in by fishing vessels of the 1840's and 1850's.

John Pickett had only a 4/16 interest in the schooner *John Ponder, Jr.* (value, $2,250, in 1870). It was used at times for coal, and was carried in the inventory through 1877, when a 21/64 interest was valued at $600. He had a half interest, also with Samuel Wilson, in the schooner *Josephine* (value, 1870, $1,768; 1876, $900). Again he shared ownership with Samuel Wilson in the schooner *Syren* (1872, $900). The vessel was

burned off Nova Scotia in January, 1873; the loss on the vessel was $2,000; on the fish, $1,500. John Pickett had only a 2/16 interest in the schooner *Kate Rommel* (1873, $1,700); it carried coal, and was last valued in 1876 at $1,400. The first ship to be listed after the new partnership of 1877 was the schooner *H. L. Newman;* it was engaged in the fish trade and was owned, ½ by John Pickett, ¼ by Woodberry, and ¼ by Trask. The schooner *W. N. Gessner* was ill-fated; John Pickett bought one-half from Captain John W. Adams on July 7, 1882, for $500; ½ was credited to Woodberry. No dividends were ever received, for the vessel was lost in the Delaware River in September, 1882. John Pickett paid $968 for an interest in the bark *Allan Wilde,* Captain Newman, in 1884. The total value of interests in vessels appears in the annual accounting for certain years; the decline from $13,568 in 1870, to $9,900 in 1873, to $8,000 in 1876, coincides with the general reduction in shipping out of Beverly.

Woodberry and Trask held interests in three vessels, the last of a long line. They each had a half interest in the schooner *Maud,* which carried coal, and dropped out of the records in 1899.[34] But two fishing vessels, the *Margaret* and the *Mabel D. Hines,* they saw through from the start. The former, named for Woodberry's wife, Margaret Roundy, was built at Essex in 1888-1889. At that time Woodberry held 6/8, George E. Pickett (nephew of John) 1/8, and Susie E. Trask (wife of Jesse) 1/8. By 1891, Captain Lovett Hines owned 1/8, Margaret Woodberry, 1/8, Mrs. Trask, 1/8, G. E. Pickett, 1/8, and Woodberry, 4/8. The Beverly *Citizen* of September 28, 1889, quoting the Gloucester *Breeze,* states that the *Margaret* arrived at Gloucester with 2,500 quintals of fish, a full fare (400,000 lbs.), "largest fare to arrive this season, 2nd largest ever in port." The vessel was sold to Hayes Follansbee for $4,000 in August, 1906; Mrs. Trask received dividends of $200, Mrs. Woodberry the same, and Mr. Woodberry, $1,200. In 1893 a number of persons got together to build the schooner *Mabel D. Hines* (119 tons), named for Captain Hines' wife. The vessel was built in Essex, with Captain Lovett Hines as

34. Members of the family report that the *Maud* was lost on a voyage to Philadelphia in 1902; because of the age of the vessel, no insurance was carried. Trask, it will be recalled, withdrew from the business in 1895. Ober, *op. cit.,* p. 746, reports 54 vessels out of Beverly in 1860, 37 in 1863, 24 in 1875, and only 4 in 1885.

master; this was fifteen years after the last Marblehead fishing vessel. Owner of 1/16 was Leland H. Cole, who married Mary Roundy, a sister of Mrs. Woodberry; Woodberry held 1/16 as agent; Captain Hines owned 8/16; and he purchased the whole vessel in November, 1899.[35] Woodberry and Trask were also interested in two steam tug boat companies; for seagoing barge carriers were then leaving barges of coal at the entrance to the harbor, to be towed in, emptied, and towed out. Woodberry was Treasurer of the Salem, Danvers, and Beverly Tug Boat Co., and the firm was interested in the Consolidated Tug Boat Co. The companies met with financial difficulty when Captain John W. Phillips failed, and in 1893 the firm acquired its own steam tugboat, the *Henry Preston.*

Thus Woodberry had disposed of both the *D. A. Wilson* and the *Mabel D. Hines* by 1900, but the *Margaret* continued in use by the firm until 1906. Records of certain of her fishing voyages are of interest. In 1895 each member of a crew of nine drew $176.93 (representing 3/4 returns on a voyage), while Captain Stanley Hines drew $288.27. The balance of the wages of the hired men came to $532, the vessel's half to $2,449, for a total of $4,950. The receipts were from sale of 158,144 lbs large cod at $2.40 a hundred (total $4,035); 55,863 lbs. small cod at $1.40 ($782); 543 lbs. refuse at $1; 128 lbs. halibut at $3; and oil sold at Gloucester ($123.50), for a balance of receipts of $4,950.[36] Crew receipts were by "av. share" and "by gain on 2/3 man 1 trip." Each account included a charge of 50¢ for medicine, doubtless rum. The *Margaret* was not as successful on a herring voyage in 1896. There is a note on the ledger page: "selling Herring at such a low price and have the vessel wait for her turn it make the herring soft. If we could get 1½ cts and take out cargo upon arrival it would pay—there is not much money for the owner this trip."[37] The steam tug *Henry Preston* also continued on the records until 1906; a record of one day's expense shows: coal, $3.34; oil, .40; water, .30; wages, $8.44,

35. Damon, *op. cit.*, devotes an article to the *Margaret* and *Mabel D. Hines;* he reports that all the seamen came from the Provinces. There are Canadian licenses and customs bills for the *Margaret* (1894-1897, 1905) in the collection.

36. Pickett Coal (Woodberry), ledger 1, p. 467.

37. *Ibid.*, p. 703.

for a total of $12.48.[38] Competition from the *Elsie* and *Ethel,* owned by the Naumkeag Towing Company, helped to put it out of business. The transfer of Beverly's fishing business to Gloucester, making unprofitable Woodberry's last fishing vessel, combined with the change in the coal trade to bring about Woodberry's decision to retire in 1910. Thus was rounded out the firm's contribution to Beverly's waterfront activity through interest in some fifty vessels over a period of eighty years.

38. Pickett Coal (Woodberry), ledger 4, p. 47. Among those who worked on the tug was Thomas Palmer, of Machias, cook. He and his family settled in North Beverly where they still live. Members of the family recall Mr. Woodberry's lending the *D. A. Wilson* for a Baptist Sunday School cruise about the harbor; the tug *Henry Preston,* would be assigned to tow the vessel.

THE WILLS OF THE EARLY SETTLERS OF ESSEX COUNTY, MASSACHUSETTS

By MANFRED JONAS

SOME OF THE MOST REVEALING STATISTICS about any community can be compiled from its probate records. The size of the estates serves as an index of the general level of prosperity and documents the existence and degree of economic differentiation, while the prevailing distribution of land is also indicated. These factors in turn suggest existing power relationships which may underlie significant political developments.

For new settlements like those of seventeenth-century New England the probate records acquire even greater importance since they are likely to be the only reliable source of economic information. Moreover, in the case of Essex County, Massachusetts, they may well throw additional light on the motives for immigration to the New World and on the socio-economic basis for the egalitarian trends and representative institutions which emerged there at an early date.

Several problems in evaluating and interpreting this information present themselves at the outset. Although sufficient wills and property inventories may be found in the court records to provide the basis for valid generalizations regarding a cross-section of the community, the matter of proper identification is not easily disposed of. The relatively small number of family names and the tendency—unfortunate for the historian—to pass on given names from generation to generation are obstacles of some consequence.

Even more important is the difficulty of establishing occupations. The name of a particular individual is not infrequently coupled with his means of earning a livelihood in official records, town histories and genealogical works. Such evidence is by no means conclusive, however. A person commissioned to build a meeting house in 1640, for example, would invariably be listed as a carpenter even though this may not have been his principal trade at the time and he may never have practiced it again. Furthermore, most individuals during the colony's early years derived at least a portion of their income from farming, fishing or the rental of cattle and it cannot be determined to what extent this contributed to their economic situation.

Nevertheless, enough records exist for Essex County to make reasonably reliable identification possible in a sufficient number of cases to provide the basis for some tentative generalizations. Specifically this can be done for individuals in ten occupations which may fairly be taken to represent a cross-section of the activities of the colonists. We can, therefore, draw some conclusions about the relative economic status of carpenters, coopers, fishermen, husbandmen, merchants, shoemakers, smiths, tailors, weavers and yeomen in the towns of Beverly, Gloucester, Ipswich, Lynn, Manchester, Marblehead, Newbury, Rowley, Salem, and Salisbury in the period to 1681.

Examination of the court records and of the study of Essex County artisans made thirty years ago by Henry Wyckoff Belknap[1] yielded a total of 502 individuals whose occupation could be classified in one of the ten categories. For this group seventy-four wills were found. Although this would seem to be a sample of

TABLE I[2]

PERCENTAGE OF WILLS

Occupation	*No. of Persons*	*No. of Wills*	*%*
Carpenters	92	16	17.3
Coopers	33	6	18.2
Shoemakers	31	7	21.6
Smiths	43	7	17.9
Tailors	33	2	6.1
Weavers	24	8	33.3
All Artisans	256	46	17.9
Husbandmen	86	6	7.0
Yeomen	38	10	26.3
All Farmers	124	16	12.9
Fishermen	79	5	6.4
Merchants	43	7	17.9
All Occupations	502	74	14.7

1. Henry Wyckoff Belknap, *Trades and Tradesmen of Essex County* (Salem, 1929); *Records and Files of the Quarterly Court of Essex County, Massachusetts* (8 vols., Salem, 1911-1921); *The Probate Record of Essex County, Massachusetts* (3 vols., Salem, 1916-1920).

2. All wills were found in *The Probate Record.*

only fourteen percent, it is fair to assume that the actual figures is at least twice that. The 502 identified persons include all those still alive in 1680 while the wills are for those who died before 1681. Since the population of the colony was greater at the latter time than ever before, it is likely that at least half of the listed individuals were alive at that time and that the percentage of wills for those who had died at an earlier date can be taken as nearer thirty. Table I shows the actual breakdown, not modified by the consideration just indicated.

It appears that a reasonable number of wills exists for each occupation and occupational group and that conclusions drawn from such evidence may have considerable validity. In the case of tailors, fisherman, and husbandmen the perecentages seem inordinately low. The two former, it will be seen, were the occupations which, on the basis of the wills actually filed, were the least conducive to prosperity. It is likely, therefore, that a greater than normal proportion of their practitioners, having virtually no assets at the time of their death, were content to die intestate. In the case of husbandmen the absence of a larger number of wills must be attributed to the fact that the designation was used both for small farmers and farm laborers while only actual owners of land availed themselves of the services of the probate court. In any case, even for these occupations the wills found seem to provide a fair sample.

The estates left by the citizens of Essex County in the period under consideration ranged in size from the £4038 3s 6d in the will of Thomas Bishop, a merchant of Ipswich, filed in 1670, to the 12s 6d in that of the Lynn tailor Joseph Armitage who died in 1680. Carpenter Samuel Archer of Salem and Marblehead fisherman John Clay were in debt at the time of their death. Altogether there were six estates with a value of more than £1700 and only twelve of less than £50. A comfortable level of prosperity is thus indicated, the average estate having a value of £409, with a median of slightly over £162.

The figures take on far greater significance, however, when they are divided according to occupations and occupational groups. Since the range within each occupation is considerable, the median is a more reliable than the average, though it should be pointed

TABLE II
AVERAGE AND MEDIAN VALUE OF ESTATES

	Average Estate			*Median Estate*		
Occupation	£ s *d*	£ s *d*		£ s *d*	£ s *d*	
Merchants		2086 00 0			1715 5 1	
Farmers		342 00 0			195 3 2	
Yeomen	659 00 0			207 00 0		
Husbandmen	225 00 0			186 12 9		
Artisans		152 00 0			152 10 0	
Coopers	257 00 0			197 9 8		
Shoemakers	229 00 0			153 10 0		
Carpenters	145 00 0			145 14 7		
Weavers	162 00 0			131 18 3		
Smiths	115 00 0			114 7 9		
Tailors	3 00 0			3 00 0		
Fishermen		36 00 0			20 6 0	
All Occupations		409 00 0			162 6 3	

out that the order of the groups is not significantly different regardless of the index used.

It is apparent from Table II that the wealth of the Essex County merchants was far greater than that of any other group, over eight times as great in fact as that of the next most prosperous, the yeomen, and more than ten times that of the median of all those leaving wills. The median wealth of the artisans was approximately three-fourths that of farmers, while fishermen, at the bottom of the economic ladder, accumulated less than fifteen percent of what artisans did and only slightly more than one percent of the merchant's median. These relationships may be further underscored by pointing out that the seven merchants, with 9.5 percent of the wills, left 48.2 percent of the total estate probated before 1681. By contrast, the five fishermen, 6.8 percent of the wills, left less than 0.6 percent of the total estate. Since, as has been pointed out, it must also be assumed that wills were left only by the more prosperous elements of the population, a relatively high degree of economic differentiation is indicated.

Of greater significance than the mere differences in wealth, however, is the rate of accumulation. This figure, if determinable with any degree of accuracy, would indicate whether the tendency in the early days of the colony was towards equalization of

economic status or towards even greater differentiation. In addition to the problems of identification which affect the reliability of the basic figures, the attempt to establish accurate rates of saving encounters a further obstacle. Since none of the persons whose wills were probated prior to 1681 was born in Massachusetts the span of accumulation must be taken as the time of arrival in the colony, determined from town histories and genealogical dictionaries,[3] to that of their death. This leaves out of consideration both the age differences among the settlers at the time of their arrival and any property which they might have brought with them. To minimize the error possibly caused thereby all the leaders of the colony and any other person who may reasonably be thought to have arrived with considerable property have not been considered, nor have persons who made the crossing as children. As a result it can be assumed that those included in these statistics came literally to make their fortunes and spent the entire period of their stay gainfully employed.

TABLE III

AVERAGE AND MEDIAN RATES OF SAVING

Occupation	*Av. Rate (£/yr)*		*Median Rate (£/yr)*	
Merchants		96.9		108.6
Farmers		14.0		8.3
Yeomen	18.2		11.6	
Husbandmen	7.0		7.2	
Artisans		6.9		5.5
Coopers	14.8		10.3	
Weavers	6.6		6.5	
Shoemakers	7.4		5.9	
Carpenters	6.2		5.5	
Smiths	3.7		2.9	
Tailors	0.1		0.1	
Fishermen		1.3		0.6
All Occupations		16.6		6.0

3. Most helpful in this connection were John J. Babson, *History of the Town of Gloucester* (Gloucester, 1860), Joseph B. Felt, *History of Ipswich, Essex and Hamilton* (Cambridge, 1834), Charles Henry Pope, *The Pioneers of Massachusetts* (Boston, 1900), and Samuel Roads Jr., *History and Traditions of Marblehead* (Boston, 1860) and *Genealogical Dictionary of the First Settlers of New England* (4 vols., Boston, 1860).

The results of these calculations are most revealing and by no means without significance. Both the average rates of saving and the median, which is again the more reliable figure, not only confirm the differences in prosperity indicated in Table II, but show further that these were growing. Thus merchants whose total property was eight and one-half times as great as that of farmers were accumulating it more than fourteen times as fast, while artisans whose wealth was seven and one-half times as great as that of fishermen were increasing it at a rate nine times as large. To compare the extremes, while the median value of the merchants' property was 85 times as great as that of fishermen, it was increasing at a rate of 181 times as great.

Within occupational groups as well the rates of saving suggest some interesting trends. Thus, while the difference between the median value of estates of yeomen and husbandmen was only £20 or about 10 percent, the difference in rates of saving is 60 percent. The economic basis for a division in agriculture between small farmers and a kind of local gentry seems, therefore, to have existed.

Among the artisans it becomes apparent that the coopers were the most prosperous and that the seeming wealth of the shoemakers is accounted for largely by their longevity. That coopers should grow rich in a community in which shipbuilding and the rum trade were economically important is not too surprising. They were, in fact, the artisans most closely connected to the wealthiest group in the colony, the merchants. That smiths were less successful than weavers, carpenters or shoemakers is also understandable in a new settlement were the production of the absolute necessities of life was of greater importance than that of metal products which could, in any case, be made in only small quantities in Massachusetts. The proverbial poverty of tailors is also substantiated by these figures. It was, in the seventeenth century, an itinerant occupation with little status or profit, and in a society which looked down upon refinements in clothing one which did not bring its practitioners a great degree of success.

Superficially, then, the pattern which emerges from these statistics is the normal one of an economically differentiated society in which the differences are growing perceptibly. In two significant ways, however, this pattern differs from that prevailing in

the mother country. In the first place, the largest of the fortunes was extremely modest by European standards. £4000 was a considerable sum in the seventeenth century and one which no ordinary Englishman was ever likely to acquire. But it was small in comparison to the inherited wealth of the nobility and upper gentry or the profits of the successful London capitalist at a time when the average peer's estate was worth £30,000, when "a landowner was not accounted really rich with less than £50,000 in property," and a "fortune of many thousands of pounds, even a hundred thousand pounds, awaited the entrepreneur who was bold and successful." On the other hand, the median rate of saving in Essex County—£6 per year—was very high for a period when "labouring people and outservants" earning seven pence to a shilling per day "must have found it desperately hard to make both ends meet" and the fixed wages of artisans made it impossible for them to support a family without a supplementary income provided by their wives or children.[4]

Even more significant is the absence of the English landholding pattern which was the real basis for social differentiation and political inequality there. The monarchy's strength lay in its system of local administration which in turn depended on the power of the local nobility and upper gentry. And their power rested not merely on wealth but also on their control of the land. The long struggle against this system brought parliamentary and ultimately democratic government, but progress in this direction was retarded by the fact that land remained the symbol of power long after it had ceased to be its primary basis. There is every indication that this was not the case in Essex County. There the merchants who, as has been shown, made up by far the richest group held relatively little land. Of a total of £14,598 left in their wills only £4,351, or 29.9 percent, was in land. By contrast the land of the seven wealthiest farmers not only accounted for 79.9 percent of their total property but had an actual value 20 percent greater than that of the seven merchants. And the six most successful artisans had 50.8 percent of their property in land, five

4. Maurice Ashley, *England in the Seventeenth Century* (*The Pelican History of England,* VI, J. E. Morpurgo, ed., Harmondsworth, Middlesex, 1956) pp. 17, 22; Godfrey Davis, *The Early Stuarts* 1603-1660 (*The Oxford History of England,* IX, G. N. Clark, ed., Oxford, 1949) pp. 266, 286, 293.

of them owning more of it than the three merchants who had the least.

The tendency from the beginning was thus to leave the land in the hands of the working farmer—whether full or part-time. As a result there was little development of an owner-tenant relationship which was the basis of social and political inequality elsewhere and no tendency to recreate a landed aristocracy on the European model. The progress towards representative and democratic institutions was thus made easier.

The probate records then indicate two primary reasons why immigration to Essex County might have seemed desirable in the seventeenth century. The possibilities for financial success were substantial in nearly all of the occupations examined despite the quantitative differences observed. And there was no group which preempted the ownership of land or the exercise of political power. As a result there existed a chance for economic independence and with it the opportunity for a degree of social and political equality which could not be attained in England at that time.

THE YANKEE AND THE BARON

Edited by Lee Nathaniel Newcomer

Among several items of business at the meeting of the American Academy of Arts and Sciences in Boston on November 11, 1789, was a letter, written April 23, from the Baron de Hupsch of Cologne enclosing copies of his pamphlet, "A New Discovery for Recovering Apparently Deceased Persons." Also enclosed was a two-page printed circular inviting a scientific correspondence with Americans interested in the exchange of unusual specimens of plants, animals, insects, and minerals. The Academy voted its thanks to the Baron and requested two of its Harvard College members to have the pamphlet translated and published in the *Massachusetts Magazine*. Then the Academy's corresponding secretary, Eliphalet Pearson, Hancock Professor of Hebrew and Oriental Languages at Harvard, broached the matter of a scientific correspondence to the Reverend Dr. Manasseh Cutler of Ipswich. Cutler, an early and prominent member of the Academy, was the leading botanist of New England and interested in every phase of natural history. He had known Professor Pearson for a long time; they had measured Mount Holyoke together when Pearson was still principal of Phillips Academy at Andover.[1]

What the Harvard professor did with the Baron's pamphlet is unknown; it did not appear in the *Massachusetts Magazine*. What Manasseh Cutler thought of the Baron's proposals for a correspondence is recorded in his reply to secretary Pearson, written as Cutler was preparing to depart for New York on Ohio Company business. It reflects not only the impatience of a busy man with matters he considered frivolous but the irritation of a scientist in young America with any taint of condenscension from abroad.

1. American Academy of Arts and Sciences, Records, I, 130, Boston Athenaeum; William Parker Cutler and Julia Perkins Cutler, *Life, Journals and Correspondence of Rev. Manasseh Cutler, LL.D.* (Cincinnati, 1888), I, 80, 113.

Ipswich 20. Dec. 1789[2]

My Dear Sir,

I feel my self very little inclined to engage in a correspondence with ye Baron de Hupsch. His object seems to be to load the shelves of his museum with ye subjects of natural history, without any view to ye science. These papers seem to give him the air of a Show-man, rather than a philosopher. He offers to exchange specimens, but this would be a very small inducement to me, for I want much more to obtain a knowledge of ye productions of our own, than of foreign countries. I see no advantage to be derived from corresponding with him, except it may be an opportunity of comparing some of ye productions of this country with those of Europe, in order to ascertain, more perfectly, their different characters; but this may be done, tolerably well, by books, & with much less trouble, than by exchanging specimens.

The Baron, however, is undoubtedly, entitled to some attention. The politeness of his letters claim an answer. To neglect him totally might make an unfavorable impression on a foreigner of some consideration in his own country, & who is aiming at a very extensive correspondence among ye *Amateurs* of natural science. And to say nothing to him respecting ye natural productions of this part of America might lead him to suppose we were ignorant of them among our selves. Several of ye articles he wishes to have sent him, I have by me, such as ye prepared skins of some of our smaller quadrupedes—specimens of a number of ye American birds & fishes—a small number of curious fossils, & some specimens of singular American plants. These are of little value to me, & would, probably, gratify him. Were it not for ye time & trouble it would cost me to put them in a proper state, I would not object to sending him a small package. If I should think of doing it, it will be necessary that I should have his circular letter & his letter to ye Academy. For several years past I have sent, annualy, specimens of plants to two or three botanical Gentlemen in Europe, & have also sent, & am still collecting specimens of ye sea & river fish & shells for Mr. *Pennant,* who is endevouring to render more perfect his *Artic Zoology*. Those correspondences has afforded me much assistance in arranging ye productions of this part of ye country, & was there a prospect of deriving ye same

2. American Academy of Arts and Sciences, Letters, I, Boston Athenaeum. I am indebted to the librarian of the American Academy for permission to publish this letter.

advantages from ye Baron, I should be fond of a correspondence.[3]

When you write to ye Baron, you may, if you think it worth while, mention me to him, & should he request any particular American natural curiosity, in my power to obtain, I will endevor to forward it to him. His *Nouvelle Decouverte etc*, I should think would hardly pay ye trouble of a translation, but it may fill up a few pages in a Magazine, which would otherwise, probably be occupied with something of as small merit.

I am,
with much esteem
Dear Sir,
your most obedient
humble Servant.
M Cutler

Mr. Professor Pearson

On January 27, 1790, the records of the American Academy noted that among the newly elected Fellows was "J. G. C. A. Baron de Hupsch of Cologne in Germany Seigneur de Knickelshauser, Membre de l'Academie imperiale d' Augsbourg, de l' Academie royale de la Rochelle, des Academies electorales de Manheim & Munic, des Societies litteraires hollandoises de Batavia, de Harlem & d' Utrecht, de la Societe d' Antiquites de Cassel, de la Societe physique de Berlin, de la Societe economique de Bourghausen, & de plusieurs autres Societes litteraires . . . ."

3. See Cutler to Winthrop Sargent, November 19, 1788, Jonathan Stokes to Cutler, January 12, 1788, *Life, Journals and Correspondence*, I, 437, II, 274. Thomas Pennant, Welsh naturalist, published *Artic Zoology*, 2 volumes (London, 1784-87).

4. Records, I, 133. Of previously elected Fellows only Sir Benjamin Thompson had been given such a long citation.

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